



NIJ

Special **REPORT**

Test Results for Disk Imaging Tools: dd Provided with FreeBSD 4.4

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Introduction

The Computer Forensics Tool Testing (CFTT) project is the joint effort of the National Institute of Justice, the National Institute of Standards and Technology (NIST), the U. S. Department of Defense, the Technical Support Working Group, and other related agencies. The objective of the CFTT project is to provide measurable assurance to practitioners, researchers, and other applicable users that the tools used in computer forensic investigations provide accurate results. Accomplishing this requires the development of specifications and test methods for computer forensic tools and subsequent testing of specific tools against those specifications.

The 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 use of well-recognized methodologies for conformance and quality testing serves as the foundation of our approach for testing computer forensic tools. Plus, in an effort to further develop the specifications and test methods, we encourage the entire forensics community to visit the CFTT Web site (<http://www.cftt.nist.gov>), where drafts are accessible for both commentary and review.

This document reports the results from testing one commonly used disk imaging tool, dd as provided with FreeBSD 4.4, against *Disk Imaging Tool Specification, Version 3.1.6*, developed by the CFTT staff and available at <http://www.cftt.nist.gov/DI-spec-3-1-6.doc>. This specification identifies the top-level disk imaging tool requirements as—

- The tool shall make a bit-stream duplicate or an image of an original disk or partition.
- The tool shall not alter the original disk.
- The tool shall log I/O errors.
- The tool's documentation shall be correct.

Note: The test methodology is for software tools that copy or image hard disk drives. It does not cover analog media or digital media such as cell phones or personal digital assistants (PDAs).

Test results from other software packages and the CFTT test methodology can be found on NIJ's Computer Forensic Tool Testing Web page, <http://www.ojp.usdoj.gov/nij/sciencetech/cftt.htm>.

Test Results for Disk Imaging Tools: dd Provided with FreeBSD 4.4

Tool Tested: dd execution environment utility provided with FreeBSD 4.4

Operating System: FreeBSD 4.4-RELEASE #0 released 9/01

Supplier: FreeBSD Foundation

Address: 7321 Brockway Drive
Boulder, CO 80303

Web: <http://www.freebsd.org>

1. Results Summary by Requirements

The tool shall make a bit-stream duplicate or an image of an original disk or partition.

For all 32 test cases that were run, the dd utility produced an accurate bit-stream duplicate or an image on disks or partitions of all disk sectors copied.

The tool shall not alter the original disk.

For all the test cases that were run, a SHA-1 hash was created on the source. Another SHA-1 hash was created on the source after the test case was run. In all cases, the hash codes matched (i.e., the source was not altered).

The tool shall be able to verify the integrity of a disk image file.

This requirement does not apply to dd.

The tool shall log I/O errors.

Assertions requiring read or write errors were not tested. The dd utility did produce a log message that there was no space left on the destination when the source was greater than the destination.

The tool documentation shall be correct.

No errors were found in the documentation supplied.

2. Anomalies

No anomalies were observed.

3. Test Case Selection

The test cases were selected from the Linux test cases of *Disk Imaging Tool Specification, Version 3.1.6*. Although these test cases were developed for disk imaging tools running in the Linux environment, these cases are suitable for any UNIX-like environment such as FreeBSD.

Not all of the 52 test cases specified in *Disk Imaging Tool Specification, Version 3.1.6* apply to FreeBSD dd.

The primary criterion for selecting a test case is the existence of a tool feature that is covered by the objective of the test case as defined by the test case summary from *Disk Imaging Tool Specification, Version 3.1.6*. For example, test case DI(Linux)-1 calls for the following setup: *Copy a LINUX IDE source disk to a LINUX IDE destination disk where the source disk is smaller than the destination*. Since every parameter specified in the setup can be applied to dd, test case DI(Linux)-1 is used. However, for test case DI-17, detecting a corrupted image file, the test case is not used since dd does not detect whether an image file has been changed. In practice, this would be accomplished with a separate program such as md5sum.

3.1 Inapplicable Test Cases

Test cases that met the following criteria were designated as not applying to dd testing:

- Test cases that use a corrupted image file do not apply since this is not supported by dd.
- Test cases that require removable magnetic media such as tape were not run.

3.2 Selected Test Cases

The following 32 test cases were used to test dd in the FreeBSD environment. Each line of the table describes one test case. The **Case** column identifies the test case. The **Op** column indicates the type of operation, either to create a copy of the source or to create and image file. The **Src** column indicates the type of interface used to connect the source drive to the test PC. The **Dst** column indicates the type of interface used to connect the destination drive to the test PC. The **Rel Size** column indicates the relative size of the source drive to the destination drive. All test cases with the **Obj** parameter value of *Disk* are operations on the entire physical hard drive. All test cases with the **Obj** parameter value equal to a partition type (e.g., FAT16, etc.) are operations on a logical drive (a partition). The entries in the **Err** column indicate the type of error introduced for the test. However, this parameter was not used for the dd test cases.

Case	Op	Src	Dst	Rel Size	Obj	Error
01	copy	IDE	IDE	src < dst	Disk	none
02	copy	IDE	IDE	src = dst	Disk	none
03	copy	IDE	IDE	src > dst	Disk	none
04	copy	IDE	IDE	src < dst	FAT16	none
05	copy	IDE	IDE	src = dst	FAT32	none
06	copy	IDE	IDE	src > dst	LINUX	none
07	copy	SCSI	SCSI	src < dst	Disk	none
08	copy	SCSI	SCSI	src = dst	Disk	none
09	copy	SCSI	SCSI	src > dst	Disk	none
10	copy	SCSI	SCSI	src < dst	NTFS	none
11	copy	SCSI	SCSI	src = dst	FAT32	none
12	copy	SCSI	SCSI	src > dst	FAT16	none
13	copy	IDE	SCSI	src < dst	Disk	none
14	copy	IDE	SCSI	src > dst	Disk	none
15	copy	SCSI	IDE	src < dst	Disk	none

Case	Op	Src	Dst	Rel Size	Obj	Error
16	copy	SCSI	IDE	src > dst	Disk	none
18	image	IDE	IDE	src < dst	Disk	none
20	image	IDE	IDE	src = dst	Disk	none
21	image	IDE	IDE	src > dst	Disk	none
23	image	IDE	IDE	src < dst	LINUX	none
27	image	IDE	IDE	src = dst	FAT32	none
30	image	IDE	IDE	src > dst	FAT32	none
33	image	SCSI	SCSI	src < dst	Disk	none
35	image	SCSI	SCSI	src = dst	Disk	none
36	image	SCSI	SCSI	src > dst	Disk	none
38	image	SCSI	SCSI	src < dst	NTFS	none
42	image	SCSI	SCSI	src = dst	LINUX	none
45	image	SCSI	SCSI	src > dst	FAT16	none
48	image	IDE	SCSI	src < dst	Disk	none
49	image	IDE	SCSI	src > dst	Disk	none
51	image	SCSI	IDE	src < dst	Disk	none
52	image	SCSI	IDE	src > dst	Disk	none

4. Test Results by Assertion

This section presents the results of dd testing with results grouped by assertion. The assertions are taken from *Disk Imaging Tool Specification, Version 3.1.6*.

4.1 Mandatory Assertions

AM-1. If a source is accessed by the tool, then the source will not be altered.

After each source disk is created, a SHA-1 hash value is calculated and saved. Each time the tool is run, another SHA-1 hash is calculated after the run and compared to the saved value. For all test cases that were run, the hash codes matched (i.e., the source was not altered).

The column labeled **Case** is the test case ID. **Before SHA-1** is the first four and last four digits (in hexadecimal) of the SHA computed on the source disk before running any test cases. **After SHA-1** is the first four and last four digits (in hexadecimal) of the SHA computed on the source disk after executing dd for the given test case. The **SHA Values Match?** column indicates if the full hash values match.

Case	Before SHA-1	After SHA-1	SHA Values Match?
01	8034 ... B235	8034 ... B235	OK
02	83A0 ... 2A54	83A0 ... 2A54	OK
03	83A0 ... 2A54	83A0 ... 2A54	OK
04	83A0 ... 2A54	83A0 ... 2A54	OK
05	3DE5 ... FD14	3DE5 ... FD14	OK
06	83A0 ... 2A54	83A0 ... 2A54	OK
07	25BF ... 9CBF	25BF ... 9CBF	OK
08	25BF ... 9CBF	25BF ... 9CBF	OK
09	0F9D ... 7AB0	0F9D ... 7AB0	OK
10	5957 ... 1B8D	5957 ... 1B8D	OK
11	D6AD ... D34D	D6AD ... D34D	OK

12	0F9D ... 7AB0	0F9D ... 7AB0	OK
13	8034 ... B235	8034 ... B235	OK
14	3DE5 ... FD14	3DE5 ... FD14	OK
15	0F9D ... 7AB0	0F9D ... 7AB0	OK
16	0F9D ... 7AB0	0F9D ... 7AB0	OK
18	8034 ... B235	8034 ... B235	OK
20	83A0 ... 2A54	83A0 ... 2A54	OK
21	83A0 ... 2A54	83A0 ... 2A54	OK
23	83A0 ... 2A54	83A0 ... 2A54	OK
27	3DE5 ... FD14	3DE5 ... FD14	OK
30	3DE5 ... FD14	3DE5 ... FD14	OK
33	25BF ... 9CBF	25BF ... 9CBF	OK
35	25BF ... 9CBF	25BF ... 9CBF	OK
36	0F9D ... 7AB0	0F9D ... 7AB0	OK
38	5957 ... 1B8D	5957 ... 1B8D	OK
42	0F9D ... 7AB0	0F9D ... 7AB0	OK
45	0F9D ... 7AB0	0F9D ... 7AB0	OK
48	8034 ... B235	8034 ... B235	OK
49	8034 ... B235	8034 ... B235	OK
51	25BF ... 9CBF	25BF ... 9CBF	OK
52	25BF ... 9CBF	25BF ... 9CBF	OK

AM-2. If there are no errors reading from a source or writing to a destination, then a bit-stream duplicate of the source will be created on the destination.

The column labeled **Case** is the test case ID. The type of object copied (disk or partition) is indicated in the **Obj** column. The column labeled **Src** is the number of sectors on the source to be copied. The column labeled **Dst** is the number of sectors on the destination. The numbers of sectors compared are listed in the **Compared** column. The column **Not Matched** indicates the number of sectors that were expected to compare equal but were different.

Case	Obj	Src	Dst	Compared	Not Matched
01	Disk	40188960	58633344	40188960	0
02	Disk	40188960	40188960	40188960	0
03	Disk	40188960	12594960	12594960	0
04	FAT16	1236942	1333332	1236942	0
05	FAT32	1236942	1236942	1236942	0
06	LINUX	6152895	5944050	5944050	0
07	Disk	17938985	35843670	17938985	0
08	Disk	17938985	17938985	17938985	0
09	Disk	17938985	17921835	17921835	0
10	NTFS	1236942	1333332	1236942	0
11	FAT32	1236942	1236942	1236942	0
12	FAT16	1236942	1140552	1140552	0
13	Disk	40188960	71687370	40188960	0
14	Disk	39102336	35885448	35885448	0
15	Disk	17938985	40188960	17938985	0
16	Disk	17938985	12594960	12594960	0
18	Disk	40188960	58633344	40188960	0
20	Disk	40188960	40188960	40188960	0
21	Disk	40188960	39102336	39102336	0
23	LINUX	6152895	6361740	6152895	0
27	FAT32	1236942	1236942	1236942	0
30	FAT32	1236942	1140552	1140552	0

Case	Obj	Src	Dst	Compared	Not Matched
33	Disk	17938985	35843670	17938985	0
35	Disk	17938985	17938985	17938985	0
36	Disk	17938985	17921835	17921835	0
38	NTFS	1236942	1333332	1236942	0
42	LINUX	6152895	6152895	6152895	0
45	FAT16	1236942	1140552	1140552	0
48	Disk	40188960	71687370	40188960	0
49	Disk	40188960	17938985	17938985	0
51	Disk	17938985	39102336	17938985	0
52	Disk	17938985	12594960	12594960	0

AM-3. If there are errors reading from a source or writing to a destination, then a qualified bit-stream duplicate of the source will be created on the destination. The identified areas are replaced by values specified by the tool's documentation.

This assertion was not tested.

AM-4. If there are errors reading from the source or writing to the destination, then the error types and locations are logged.

This assertion was not tested.

AM-5. If the source or destination is an IDE or SCSI drive and an image or bit-stream duplicate is created, then the interface used is presumed to be *well defined*.¹

See all test cases.

AM-6. If the expected result of any test defined in this specification is achieved and the documentation was followed without change in achieving this result, then the documentation is presumed correct.

No errors were observed in the documentation of dd obtained from the manual (man) entry.

AM-7. If a bit-stream duplicate of a source is created on a larger destination, then the contents of areas on the destination that are not part of the duplicate are set to values as specified in the tool documentation.

The column labeled **Case** is the test case ID. The type of object copied is indicated in the **Obj** column. The **Do BF** column indicates that dd should never backfill. The **Excess** column indicates the number of excess sectors on the destination. The number of excess sectors backfilled with a user-specified value is indicated in the **BF** column. The number of excess destination sectors that were not changed by dd is indicated in the **Not BF** column. The values in the **BF** and **Not BF** columns do not apply for cases 10, 23, and 38 because NTFS and Linux partitions, unlike FAT partitions, have formatting information in the excess sectors. Consequently, the values in the **BF** and **Not BF** columns for these three test cases should be ignored. Cases 10, 23, and 38 require extra steps to verify that the excess sectors are not changed by the dd command.

¹ The actual assertion from the specification refers to a specific requirement from the spec. The essence of the referenced requirement is for the interface to be well defined.

Case	Obj	Do BF	Excess	BF	Not BF
01	Disk	no	18444384	0	18444384
04	FAT16	no	96390	0	96390
07	Disk	no	17904685	0	17904685
10	NTFS	no	96390	1	96389
13	Disk	no	31498410	0	31498410
15	Disk	no	22249975	0	22249975
18	Disk	no	18444384	0	18444384
23	LINUX	no	208845	7072	201773
33	Disk	no	17904685	0	17904685
38	NTFS	no	96390	1	96389
48	Disk	no	31498410	0	31498410
51	Disk	no	21163351	0	21163351

When a FAT partition is formatted, the sectors in the lower addresses are modified to contain the FAT table and other information. The sectors in the high addresses are not changed and retain any content from before the partition is formatted. Therefore, the content of the excess sectors can be reliably known. However, NTFS and Linux ext2 partitions have control information (e.g., inodes) scattered throughout the partition. Therefore, to verify that the excess sectors are undisturbed by dd, a hash of the excess sectors is computed before and after running dd. The before hash for each case appears in Table 4-1. The after hash appears in Table 4-2. If the excess sectors are unchanged, then the hash values are the same.

Table 4-1. SHA-1 Hash of Excess Sectors Before dd

Case	Excess Sector Area Hash
10	DA90E58BF899C870F385368BD1544A3E7D4D75BC
23	85D571DAC5834ED608724FACFC5865AA5512663F
38	31C2BD77EE38AC8395F8CC11FB0D337B4A213B04

Table 4-2. SHA-1 Hash of Excess Sectors After dd

Case	Excess Sector Area Hash
10	DA90E58BF899C870F385368BD1544A3E7D4D75BC
23	85D571DAC5834ED608724FACFC5865AA5512663F
38	31C2BD77EE38AC8395F8CC11FB0D337B4A213B04

AM-8. If a bit-stream duplicate of a source is created on a smaller destination, then the duplicate is qualified by omitted portions of the bit-stream, and the tool will notify the user that the source is larger than the destination.

The column labeled **Case** is the test case ID. The column labeled **Op** indicates the type of operation selected. The type of object copied is indicated in the **Obj** column. The message from a pop-up message box is in the **Message** column.

Case	Op	Obj	Message
03	copy	Disk	/dev/ad3: end of device
06	copy	LINUX	/dev/ad3s2: end of device
09	copy	Disk	/dev/dal: end of device
12	copy	FAT16	/dev/dals1: end of device
14	copy	Disk	/dev/da0: end of device
16	copy	Disk	/dev/ad3: end of device
21	image	Disk	/dev/ad3: end of device

Case	Op	Obj	Message
30	image	FAT32	/dev/ad3s1: end of device
36	image	Disk	/dev/da1: end of device
45	image	FAT16	/dev/dals1: end of device
49	image	Disk	/dev/da0: end of device
52	image	Disk	/dev/ad1: end of device

4.2 Optional Assertions

AO-1. If a hash of one or more blocks (i.e., less than the entire disk) from the source is computed before duplication and is compared to a hash of the same blocks from the destination, the hashes will compare equal.

This assertion was not tested.

AO-2. If more than one partition exists on the source disk, the tool will produce a duplicate of any user-selected source partition on the destination.

See the results for the following test cases. Each line of the table describes one test case. The **Case** column identifies the test case. The **Op** column indicates the type of operation, either to create a copy of the source or to create and image file. The **Src** column indicates the type of interface used to connect the source drive to the test PC. The **Dst** column indicates the type of interface used to connect the destination drive to the test PC. The **Rel Size** column indicates the relative size of the source drive to the destination drive. All test cases with the **Obj** parameter value of *Disk* are operations on the entire physical hard drive. All test cases with the **Obj** parameter value equal to a partition type (e.g., FAT16, etc.) are operations on a logical drive (a partition). The entries in the **Err** column indicate the type of error introduced for the test. However, this parameter was not used for the dd test cases.

Case	Op	Src	Dst	Rel Size	Obj	Error
04	copy	IDE	IDE	src < dst	FAT16	none
05	copy	IDE	IDE	src = dst	FAT32	none
06	copy	IDE	IDE	src > dst	LINUX	none
10	copy	SCSI	SCSI	src < dst	NTFS	none
11	copy	SCSI	SCSI	src = dst	FAT32	none
12	copy	SCSI	SCSI	src > dst	FAT16	none
23	image	IDE	IDE	src < dst	LINUX	none
27	image	IDE	IDE	src = dst	FAT32	none
30	image	IDE	IDE	src > dst	FAT32	none
38	image	SCSI	SCSI	src < dst	NTFS	none
42	image	SCSI	SCSI	src = dst	LINUX	none
45	image	SCSI	SCSI	src > dst	FAT16	none

AO-3. If a partition exists on the source, the tool will display or log a message indicating that the partition exists and display or log one or more items of information from the following list: drive indicator, device type, device address or mount point, size, space used, and free space.

This product does not provide the functionality described.

AO-4. If the tool logs the tool version, it will be the version referred to in the implementation's documentation.

This product does not provide the functionality described.

AO-5. If the subject disk identification is available and the tool is capable of logging the subject disk identification, then the subject disk identification will be logged.

This product does not provide the functionality described.

AO-6. If the tool logs the source partition table in human readable form and the information from the source partition table can be ascertained independently from the tool, then the source partition table information will accurately match the content of the independent partition table information.

This product does not provide the functionality described.

AO-7. If the tool logs errors and any error occurs, then the type and location of the error will be logged.

This assertion was not tested.

AO-8. If the tool logs tool actions and the tool's documentation states what actions are logged, then the actions logged will accurately match those documented in the tool's documentation.

This product does not provide the functionality described.

AO-9. If the tool logs start and finish run times, then the logged start and finish run times will accurately match those recorded by the tester according to screen input images, test input scripts, or tester notes.

This product does not provide the functionality described.

AO-10. If the tool logs tool settings and the tool's documentation states what settings are logged, then the logged settings will accurately match those set by the tester or as documented in the tool's documentation.

This product does not provide the functionality described.

AO-11. If the tool logs user comments, then the logged user comments will accurately match those entered by the tester as captured in screen input images, test input scripts, or tester notes.

This product does not provide the functionality described.

AO-12. If the tool creates image files, then it will create an image file of a source on a magnetic medium that can be removed from the platform on which it was created.

Suitable magnetic tape removable media were not available. Small (less than 250MB) media, such as floppy disks or zip disks, were not considered useful for imaging hard drives and therefore, were not tested.

AO-13. If the tool creates an image file from a source on a removable magnetic medium, then a duplicate of the source created from the removable magnetic medium will result in a duplicate on the destination, and the destination will compare equal to the source.

Suitable magnetic tape removable media were not available. Small (less than 250MB) media, such as floppy disks or zip disks, were not considered useful for imaging hard drives and therefore, were not tested.

AO-14. If an image file is created, and there are no errors reading from a source, nor errors writing to a destination, then a bit-stream duplicate created from the image file will compare equal to the source.

The results for image files are included in the results for the mandatory assertions. The following test cases are for image files. Each line of the table describes one test case. The **Case** column identifies the test case. The **Op** column indicates the type of operation, either to create a copy of the source or to create and image file. The **Src** column indicates the type of interface used to connect the source drive to the test PC. The **Dst** column indicates the type of interface used to connect the destination drive to the test PC. The **Rel Size** column indicates the relative size of the source drive to the destination drive. All test cases with the **Obj** parameter value of *Disk* are operations on the entire physical hard drive. All test cases with the **Obj** parameter value equal to a partition type (e.g., FAT16, etc.) are operations on a logical drive (a partition). The entries in the **Err** column indicate the type of error introduced for the test. However, this parameter was not used for the dd test cases.

Case	Op	Src	Dst	Rel Size	Obj	Error
18	image	IDE	IDE	src < dst	Disk	none
20	image	IDE	IDE	src = dst	Disk	none
21	image	IDE	IDE	src > dst	Disk	none
23	image	IDE	IDE	src < dst	LINUX	none
27	image	IDE	IDE	src = dst	FAT32	none
30	image	IDE	IDE	src > dst	FAT32	none
33	image	SCSI	SCSI	src < dst	Disk	none
35	image	SCSI	SCSI	src = dst	Disk	none
36	image	SCSI	SCSI	src > dst	Disk	none
38	image	SCSI	SCSI	src < dst	NTFS	none
42	image	SCSI	SCSI	src = dst	LINUX	none
45	image	SCSI	SCSI	src > dst	FAT16	none
48	image	IDE	SCSI	src < dst	Disk	none
49	image	IDE	SCSI	src > dst	Disk	none
51	image	SCSI	IDE	src < dst	Disk	none
52	image	SCSI	IDE	src > dst	Disk	none

5. Testing Environment

The tests were run in the NIST CFTT lab. This section describes the hardware (test computers and hard drives) available for testing. Not all components were used in testing. The following host computers were available for execution of test cases: Paladin, HecRamsey, McCloud, McMillan, AndWife, Cadfael, Rumpole, Wimsey, and JudgeDee. More than 25 hard drives (13 different models and 6 different brands) were used for the tests (Table 5-1). The tests were run with hard drives arranged in one of several possible configurations (Table 5-4), as required by the test parameters.

5.1 Extended BIOS Host Computers

Cadfael, Rumpole, Wimsey, and JudgeDee have the following hardware components in common:

Table 5-1. Extended BIOS Host Computer Hardware Components

ASUS CUSL2 Motherboard BIOS: Award Medallion v6.0 Intel Pentium III (Coppermine) 933Mhz 512,672k Memory Adaptec 29160N SCSI Adapter card Plextor CR-RW PX-W124TS Rev: 1.06 Iomega 2GB Jaz drive Rev: E.17 LS-120 Super floppy Two slots for removable IDE hard disk drives Two slots for removable SCSI hard disk drive
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Rumpole also had a 30GB OnStream SC30 tape drive (not used in the test procedures). JudgeDee had a third slot for a removable IDE hard disk drive.

Paladin, HecRamsey, McCloud, McMillan, and AndWife have the following hardware components in common:

Table 5-2. Alternate Extended BIOS Host Computer Hardware Components

Intel D845WNL Motherboard BIOS: HV84510A.86A.0022.P05 Intel Pentium IV 2.0Ghz 512,672k Memory Adaptec 29160 SCSI Adapter card Tekram DC-390U3W SCSI Adapter card Plextor CR-RW PX-W124TS Rev: 1.06 LG 52X CD-ROM Floppy drive Three slots for removable IDE hard disk drives Two slots for removable SCSI hard disk drive

5.2 Hard Disk Drives

The hard disk drives that were used were selected from the drives listed in Table 5-3. These hard drives were mounted in removable storage modules. Any combination of two IDE hard drives and two SCSI hard drives can be installed in Paladin, HecRamsey, McCloud, McMillan, AndWife, Cadfael, Rumpole, Wimsey, or JudgeDee as required for a test. The legacy BIOS computers can have only two IDE drives mounted at a time.

The IDE disks used in the legacy BIOS computers have jumpers set manually to drive 0 for source drives and drive 1 for destination drives, and the media drive is set to either 0 or 1 depending on the drive slot available after either the source or destination drive is installed. The IDE disks used in Paladin, HecRamsey, McCloud, McMillan, AndWife, Cadfael, Rumpole, Wimsey, and JudgeDee have jumpers set for cable select.

The SCSI ID for the SCSI disk is set to either 0 or 1 as required by the test case. Except as noted, a source disk is set to ID 0, and a destination disk is set to ID 1.

Table 5-3. Hard Drives Available for Use in Testing

Label	Model	Interface	Usable Sectors	Capacity (GB)
13	FUJITSU_MAN3184MC	SCSI	35885447	18.37
20	SEAGATE_ST373405LC	SCSI	143374740	43.40
31	FUJITSU_MAG3091L SUN9.0G	SCSI	17689266	9.06
33	FUJITSU_MAG3091L SUN9.0G	SCSI	17689266	9.06
34	FUJITSU_MAG3091L SUN9.0G	SCSI	17689266	9.06
1F	QUANTUM_ATLAS10K3_18_SCA	SCSI	35916547	18.38
62	WDCWD64AA	IDE	12594960	6.44
63	WDCWD64AA	IDE	12594960	6.44
64	WDCWD64AA	IDE	12594960	6.44
65	WDCWD64AA	IDE	12594960	6.44
71	IC35L040AVER07-0	IDE	80418240	41.17
7A	MAXTOR_6L040J2	IDE	78177792	40.02
90	WDC_WD300BB-00CAA0	IDE	58633344	30.02
92	WDC_WD300BB-00CAA0	IDE	58633344	30.02
93	WDC_WD300BB-00CAA0	IDE	58633344	30.02
9E	WDC_WD200BB-32CFC0	IDE	39102336	20.02
A5	WDC_WD200BB-00AUA1	IDE	39102336	20.02
A7	WDC_WD200BB-00AUA1	IDE	39102336	20.02
A8	WDC_WD200BB-00AUA1	IDE	39102336	20.02
CC	SEAGATE_ST336705LC	SCSI	71687370	36.70
E2	QUANTUM_ATLAS10K2-TY092J	SCSI	17938985	9.18
E3	QUANTUM_ATLAS10K2-TY092J	SCSI	17938985	9.18
E4	QUANTUM_ATLAS10K2-TY092J	SCSI	17938985	9.18
E6	SEAGATE_ST318404LC	SCSI	35843670	18.35
E7	SEAGATE_ST318404LC	SCSI	35843670	18.35
EB	SEAGATE_ST39204LC	SCSI	17921835	9.17
F5	IBM-DTLA-307020	IDE	40188960	20.57
F6	IBM-DTLA-307020	IDE	40188960	20.57
F7	IBM-DTLA-307020	IDE	40188960	20.57

5.3 Test Configurations

The host computer and hard drive setup were determined by the test case parameters. Two or three disk drives were required for each test case. Source, destination, and media disks were required for all test cases. The source disk provides something to copy. The destination disk provides a place to put the copy. The media disk provides a place to put the image file for test cases that require the creation of an image file. The media disk also provides the runtime FreeBSD environment for running dd. A DOS Boot floppy was used to create the runtime environment for the test case; it contained control scripts and log files. A CD-ROM contained the support and utility software. The support software provided for setup of test data, measurement of test results, and control of the test process.

For all the dd tests, one of the following extended BIOS computers were selected: Paladin, HecRamsey, McCloud, McMillan, AndWife, Cadfael, Rumpole, Wimsey, or JudgeDee. None of the Nexar computers were used.

The source disk interface and type of source partition determined the source disk selection. A disk was selected with the matching interface that contained a partition of the type required for the test case. The destination interface and the relative size parameters determined the selection of the destination drive. A drive was selected with the specified interface and, for whole-disk operations, size relative to the source. For partition operations, the actual size of the destination drive did not matter because the size of the partition on the destination was relevant. After the source and destination drives were selected, the media disk was selected for one of the two available drive slots.

The 12 system hard drive configurations used for the tests are presented in Table 5-4. The **Step** column indicates the phase of the test to which the configuration applies. The **Source** column indicates where the source drive was mounted. The drive was usually positioned as primary drive 1. SCSI source drives were set to SCSI ID 0. The **Destination** column indicates the positioning of the destination drive. The **Media** column indicates the positioning of the media drive.

Table 5-4. System Configurations

ID	Step	Source	Destination	Media
1	wipe		IDE secondary 1	IDE primary 0
2	wipe		SCSI ID 1	IDE primary 0
3	dd	IDE primary 1	IDE secondary 1	IDE primary 0
4	dd	SCSI ID 0	SCSI ID 1	IDE primary 0
5	dd	SCSI ID 0	IDE secondary 1	IDE primary 0
6	dd	IDE primary 1	SCSI ID 1	IDE primary 0
7	compare	IDE primary 0	IDE secondary 1	
8	compare	IDE primary 0	SCSI ID 1	
9	compare	SCSI ID 0	IDE secondary 1	
10	compare	SCSI ID 0	SCSI ID 1	
11	hash	IDE primary 0		
12	hash	SCSI ID 0		

5.4 Support Software

FS-TST Release 1.0 was developed to support the testing of disk imaging tools. FS-TST Release 1.0 can be obtained from <http://www.cftt.nist.gov>. The support software serves five main functions: initialization of a disk to a known value (DISKWIPE), comparison of a source with a destination (DISKCOMP, PARTCOMP, ADJCOMP, and SECCOMP), detection of changes to a disk (DISKHASH and SECHASH), corruption of an image file (CORRUPT), and simulation of a faulty disk [BADDISK and BADX13]. All programs (except for BADDISK and BADX13) were written in ANSI C and compiled with the Borland C++ compiler version 4.5. BADDISK and BADX13 were written in assembler language and compiled with Borland Turbo Assembler version 5.0.

5.5 Basic Structure of Test Cases

A test case has five parts: setup, execution of the tool to acquire an image, execution of the tool to add the image to the case file, execution of the tool to restore the image to a destination drive, and measurement of the results. The setup for the test case was done in the DOS environment and involved the following steps:

1. Initialize a source disk to a known value.
2. Hash the source disk and save the hash value.
3. Initialize a destination disk to a known value.
4. If the test requires a partition on the destination, then create and format a partition on the destination disk. If the test uses a destination partition larger than the source partition and the partition type is either NTFS or Linux, then compute a reference hash of the excess sectors of the destination partition.
5. If the test uses an image file, partition and format a media disk and load FreeBSD to the media disk.

Note that steps 1, 2, and 5 are performed once and then used for several test cases.

The tool execution was done in the FreeBSD environment. The steps in this execution phase were:

1. If an image file is required, use the tool to create an image file of the source on the media disk.
2. Use the tool to create the destination disk by either restoring an image file of the source to the destination or copying the source to the destination.

Measurement of the test results had four steps:

1. Compute a hash of the source disk and compare the computed hash value to the saved hash value. If the hashes are the same, then the tool has not altered the source disk.
2. Compare the source to the destination to determine what sectors match and the disposition of any excess destination sectors.
3. Examine the tool log file for any expected messages. For example, if the destination is too small, then there should be a message indicating the condition.

4. If the test uses a destination partition larger than the source partition and the partition type is either NTFS or Linux, then compute a hash of the excess sectors of the destination partition. If this hash agrees with the reference hash of the excess sectors, then the excess sectors are unchanged by dd.

6. Test Results Summary 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 results summary.

Heading	Description
First Line	Test case ID and name and version of software tested.
Case Summary:	Test case summary from <i>Disk Imaging Tool Specification, Version 3.1.6</i> .
Tester Name:	Name or initials of person executing test procedure.
Test Date	Time and date that test was started.
PC:	Name of computer where tool under test was executed.
Disks:	Description of the hard disks used in the test as the source, destination, and media. The BIOS assigned drive number is in hexadecimal.
Source disk setup:	Documentation of the creation of the source disk including the disk label, the computer used for setup, the person creating the source, time and date, the partitions and operating systems installed, the diskwipe command, and SHA-1 hash after the hard drive is configured.
Destination Setup:	Documentation of the creation of the destination disk including the diskwipe command. For corrupt image test cases, a destination is not required.
Execute:	Documentation of each command executed during the test.
Log files & location:	Name and location of the log files in the test file archive.
Log File Highlights:	Selected entries from three of the test case log files: <ul style="list-style-type: none"> • dd stderr output file. • Comparison of source and destination. • For partition cases, the source and destination partition tables. • SHA-1 hash of the source drive after the test.
Expected Results:	Expected results listed in <i>Disk Imaging Tool Specification, Version 3.1.6</i> .
Actual Results:	List of any anomalies observed.
Analysis:	Whether or not the expected results were achieved.

7. Interpretation of Test Results

There are six main questions of interest when examining the results of a test case:

- Is the source disk unchanged?
- Have the correct number of sectors been accurately copied?
- Has the tool alerted the user to a destination smaller than the source?
- Has the tool handled excess destination sectors correctly as specified?
- Has the tool detected changes to an image file?
- Has the tool alerted the user to any I/O errors?

7.1 Source Disk

The integrity of the source disk is checked by comparing the hash of the source disk computed before any tests are run with the hash computed after the tool is used. If the two hash values differ, then the tool has changed the source disk. The reference hash is recorded in the **Source disk setup** box, and the hash computed after the tool is run is recorded in the **Log file highlights** box.

7.2 Number of Sectors Copied

The number of sectors that should be copied is the minimum of the number of source sectors and the number of destination sectors. This value can be found on the *sectors compared* line of the **Log file highlights** box. If the next line of the **Log file highlights** box, *sectors differ*, is not zero, then the tool did not correctly copy all the sectors that should have been copied. The logical block addresses of the first few sectors not copied correctly are listed on the *diffs range* line.

The number of sectors in the source and destination can be determined as follows: If the tool operated on an entire disk, then the size of the source and destination can be found in the **Disks** box. If the tool operated on a single partition, then the partition sizes are presented in the *partition tables* in the **Log file highlights** box. The partitions used in the test are identified in the */select* option parameters to the **PARTCMP** program execution presented in the **Execute** box. The */select* option is followed by two parameters: the partition numbers of the source and destination partitions.

7.3 Small Destination Detection

The tool should issue a message indicating that the destination is smaller than the source for any test case defined for a smaller destination. The message is captured from the *stderr* file produced by **dd** and is reproduced in the **Log file highlights** box.

7.4 Excess Sectors

For disk operations, the tool should leave the contents of excess sectors as is. The tool action can be verified by the entries labeled *Zero fill*, *Other fill*, and *Dst byte fill*, giving the count of sectors in each category. The number of excess sectors is indicated in the **Log file highlights** box by the line with the text "... Source (...) has [number of excess sectors] fewer sectors"

For test cases 10, 23, and 38, additional steps are required to verify that the tool has not altered any excess sectors. When a FAT partition is formatted, the sectors in the lower addresses are modified to contain the FAT table and other information. The sectors in the high addresses are not changed and retain any content from before the partition is formatted. Therefore, the content of the excess sectors can be reliably known. However, NTFS and Linux ext2 partitions have control information (e.g., inodes) scattered throughout the partition. Therefore, to verify that the excess sectors are undisturbed by **dd**, a hash of the excess sectors is computed before and after

running dd. The before hash appears in the **Log file highlights** box and is labeled *Before dd*. The after hash appears in the **Log file highlights** box and is labeled *After dd*. If the excess sectors are unchanged, then the hash values are the same.

8. Test Results Summaries

Case DI(Linux)-01 for FreeBSD 4.4 dd	
Case Summary:	Copy a LINUX IDE source disk to a LINUX IDE destination disk where the source disk is smaller than the destination
Tester Name:	SN
Test Date:	Fri Oct 18 11:18:23 2002
PC:	Cadfael
Disks:	Source: DOS Drive 80 Physical Label F6 Destination: DOS Drive 81 Physical Label 92 Image media: DOS Drive 80 Physical Label 20 F6 is an IBM-DTLA-307020 with 40188960 sectors 92 is a WDC WD300BB-00CAA0 with 58633344 sectors 20 is a SEAGATE ST373405LC with 143374740 sectors Windows 98 [Version 4.10.2222] DOS boot floppy with run scripts CD-ROM with PartitionMagic Pro 6.0 and FS-TST Release 1.0
Source disk setup:	Windows 2000 with NTFS & Fat32 Disk: F6 Host: Wimsey Operator: JRL OS: Windows 2000 Date: Sat Jul 21 15:53:12 2001 DISKWIPE.EXE F6_SRC Wimsey 80 F6 /src /new_log /noask /comment Windows 2000/NT source X:\pm\pqmagic /cmd=X:\pm\nt-src.txt Load Operating System to Source disk DISKHASH.EXE LX-27 Morse 80 /before Disk hash = 8034683D5D55BA51409AC7B5CB0845CA2CF6B235
Destination Setup:	Z:\ss\DISKWIPE.EXE 01 Cadfael 81 92 /noask /dst /new_log /comment SN
Execute:	Boot to DOS Z:\ss\DISKWIPE.EXE 01 Cadfael 81 92 /noask /dst /new_log /comment SN Boot to FreeBSD dd_copy (copy) dd if=/dev/ad0 of=/dev/ad1 bs=512 Shutdown FreeBSD, Boot to DOS Z:\ss\DISKCOMP.EXE 01 Cadfael 80 F6 81 92 /new_log /comment SN Z:\ss\DISKHASH.EXE 01 Cadfael 80 /comment F6(SN) /new_log /after
Log files loc:	test-archive/dd/freebsd-4.4/01
Log File Highlights:	dd_copy (copy) Command: dd if=/dev/ad0 of=/dev/ad1 bs=512 40188960+0 records in 40188960+0 records out 20576747520 bytes transferred in 6190.879944 secs (3323719 bytes/sec) === Error messages === no message = = = = Measurement Logs = = = = Sectors Compared 40188960 Sectors Differ 0 Diffs range Source (40188960) has 18444384 fewer sectors than destination (58633344) Zero fill: 0 Src Byte fill (F6): 0 Dst Byte fill (92): 18444384 Other fill: 0 Other no fill: 0 Hash after test: 8034683D5D55BA51409AC7B5CB0845CA2CF6B235
Expected Results:	Source disk is unchanged src compares qualified equal to dst
Actual	No anomalies

Results:	
Analysis:	Expected results achieved

Case DI(Linux)-02 for FreeBSD 4.4 dd	
Case Summary:	Copy a LINUX IDE source disk to a LINUX IDE destination disk where the source disk is the same size as the destination
Tester Name:	JRL
Test Date:	Mon Oct 21 08:23:30 2002
PC:	McCloud
Disks:	Source: DOS Drive 80 Physical Label F5 Destination: DOS Drive 81 Physical Label F7 Image media: DOS Drive 80 Physical Label 93 F5 is an IBM-DTLA-307020 with 40188960 sectors F7 is an IBM-DTLA-307020 with 40188960 sectors 93 is a WDC WD300BB-00CAA0 with 58633344 sectors Windows 98 [Version 4.10.2222] DOS boot floppy with run scripts CD-ROM with PartitionMagic Pro 6.0 and FS-TST Release 1.0
Source disk setup:	Dual boot Linux/Windows Me with EXT2 & Fat16 Disk: F5 Host: Cadfael Operator: JRL OS: WindowsMe/Linux Date: Sat Aug 11 11:13:43 2001 DISKWIPE.EXE F5_SRC Cadfael 80 F5 /src X:\pm\pqmagic /cmd=X:\pm\fat-src.txt Load Operating System to Source disk DISKHASH.EXE F5_SRC Cadfael 80 /before Disk hash = 83A0002816BBF089F8BE33C41C92C3B5A0F42A54
Destination Setup:	Z:\ss\DISKWIPE.EXE 02 McCloud 81 F7 /noask /dst /new_log /comment JRL
Execute:	Boot to DOS Z:\ss\DISKWIPE.EXE 02 McCloud 81 F7 /noask /dst /new_log /comment JRL Boot to FreeBSD dd_copy (copy) dd if=/dev/ad1 of=/dev/ad3 bs=512 Shutdown FreeBSD, Boot to DOS Z:\ss\DISKCOMP.EXE 02 McCloud 80 F5 81 F7 /new_log /comment JRL Z:\ss\DISKHASH.EXE 02 Wimsey 80 /comment F5(JRL) /new_log /after
Log files loc:	test-archive/dd/freebsd-4.4/02
Log File Highlights:	dd_copy (copy) Command: dd if=/dev/ad1 of=/dev/ad3 bs=512 40188960+0 records in 40188960+0 records out 20576747520 bytes transferred in 9381.802960 secs (2193262 bytes/sec) === Error messages === no message = = = Measurement Logs = = = Sectors Compared 40188960 Sectors Differ 0 Diffs range Hash after test: 83A0002816BBF089F8BE33C41C92C3B5A0F42A54
Expected Results:	Source disk is unchanged src compares equal to dst
Actual Results:	No anomalies
Analysis:	Expected results achieved

Case DI(Linux)-03 for FreeBSD 4.4 dd	
Case Summary:	Copy a LINUX IDE source disk to a LINUX IDE destination disk where the source disk is larger than the destination
Tester Name:	JRL
Test Date:	Sat Oct 19 13:38:16 2002
PC:	McCloud
Disks:	Source: DOS Drive 80 Physical Label F5 Destination: DOS Drive 81 Physical Label 64 Image media: DOS Drive 80 Physical Label 93 F5 is an IBM-DTLA-307020 with 40188960 sectors 64 is a WDCWD64AA with 12594960 sectors

	93 is a WDC WD300BB-00CAA0 with 58633344 sectors Windows 98 [Version 4.10.2222] DOS boot floppy with run scripts CD-ROM with PartitionMagic Pro 6.0 and FS-TST Release 1.0
Source disk setup:	Dual boot Linux/Windows Me with EXT2 & Fat16 Disk: F5 Host: Cadfael Operator: JRL OS: WindowsMe/Linux Date: Sat Aug 11 11:13:43 2001 DISKWIPE.EXE F5_SRC Cadfael 80 F5 /src X:\pm\pqmagic /cmd=X:\pm\fat-src.txt Load Operating System to Source disk DISKHASH.EXE F5_SRC Cadfael 80 /before Disk hash = 83A0002816BBF089F8BE33C41C92C3B5A0F42A54
Destination Setup:	Z:\ss\DISKWIPE.EXE 03 McCloud 81 64 /noask /dst /new_log /comment JRL
Execute:	Boot to DOS Z:\ss\DISKWIPE.EXE 03 McCloud 81 64 /noask /dst /new_log /comment JRL Boot to FreeBSD dd_copy (copy) dd if=/dev/ad1 of=/dev/ad3 bs=512 end of device Shutdown FreeBSD, Boot to DOS Z:\ss\DISKCOMP.EXE 03 McCloud 80 F5 81 64 /new_log /comment JRL Z:\ss\DISKHASH.EXE 03 McCloud 80 /comment F5(JRL) /new_log /after
Log files loc:	test-archive/dd/freebsd-4.4/03
Log File Highlights:	dd_copy (copy) Command: dd if=/dev/ad1 of=/dev/ad3 bs=512 12594961+0 records in 12594960+0 records out 6448619520 bytes transferred in 21097.421116 secs (305659 bytes/sec) === Error messages === dd: /dev/ad3: end of device = = = Measurement Logs = = = Sectors Compared 12594960 Sectors Differ 0 Diffs range Source (40188960) has 27594000 more sectors than destination (12594960) Hash after test: 83A0002816BBF089F8BE33C41C92C3B5A0F42A54
Expected Results:	Source disk is unchanged src compares qualified equal to dst, src is truncated on dst truncation is logged
Actual Results:	No anomalies
Analysis:	Expected results achieved

Case DI(Linux)-04 for FreeBSD 4.4 dd	
Case Summary:	Copy a LINUX IDE source disk to a LINUX IDE destination disk and the source contains a FAT16 partition where the source disk is smaller than the destination
Tester Name:	JRL
Test Date:	Thu Jan 09 12:30:25 2003
PC:	Cadfael
Disks:	Source: DOS Drive 80 Physical Label F5 Destination: DOS Drive 81 Physical Label F7 Image media: DOS Drive 80 Physical Label 7A F5 is an IBM-DTLA-307020 with 40188960 sectors F7 is an IBM-DTLA-307020 with 40188960 sectors 7A is a MAXTOR 6L040J2 with 78177792 sectors Windows 98 [Version 4.10.2222] DOS boot floppy with run scripts CD-ROM with PartitionMagic Pro 6.0 and FS-TST Release 1.0
Source disk setup:	Dual boot Linux/Windows Me with EXT2 & Fat16 Disk: F5 Host: Cadfael Operator: JRL OS: WindowsMe/Linux Date: Sat Aug 11 11:13:43 2001 DISKWIPE.EXE F5_SRC Cadfael 80 F5 /src X:\pm\pqmagic /cmd=X:\pm\fat-src.txt

	Load Operating System to Source disk DISKHASH.EXE F5_SRC Cadfael 80 /before Disk hash = 83A0002816BBF089F8BE33C41C92C3B5A0F42A54
Destination Setup:	Z:\ss\DISKWIPE.EXE 04 cadfael 81 F7 /noask /dst /new_log /comment JRL
Execute:	Boot to DOS Z:\ss\DISKWIPE.EXE 04 cadfael 81 F7 /noask /dst /new_log /comment JRL Boot to FreeBSD dd_copy (copy) dd if=/dev/ad1s1 of=/dev/ad3s1 bs=512 Shutdown FreeBSD, Boot to DOS Z:\ss\PARTCMP.EXE 04 Cadfael 80 F5 81 F7 /new_log /comment JRL /select 1 1 Z:\ss\DISKHASH.EXE 04 Cadfael 80 /comment F5(JRL) /new_log /after
Log files loc:	test-archive/dg/freebsd-4.4/04
Log File Highlights:	Source disk Drive 0x80, BIOS: Extensions Present Interrupt 13 bios 1023/254/63 (max cyl/hd values) Interrupt 13 ext 16383/016/63 (number of cyl/hd) 40188960 total number of sectors reported via interrupt 13 from the BIOS N Start LBA Length Start C/H/S End C/H/S boot Partition type 1 P 000000063 001236942 0000/001/01 0076/254/63 Boot 06 Fat16 2 X 002249100 007181055 0140/000/01 0586/254/63 05 extended 3 S 000000063 000208782 0140/001/01 0152/254/63 83 Linux 4 x 000208845 000144585 0153/000/01 0161/254/63 05 extended 5 S 000000063 000144522 0153/001/01 0161/254/63 06 Fat16 6 x 004450005 000192780 0417/000/01 0428/254/63 05 extended 7 S 000000063 000192717 0417/001/01 0428/254/63 16 other 8 S 000000000 000000000 0000/000/00 0000/000/00 00 empty entry 9 P 009430155 006152895 0587/000/01 0969/254/63 83 Linux 10 P 039760875 000417690 1023/000/01 1023/254/63 82 Linux swap Destination disk Drive 0x81, BIOS: Extensions Present Interrupt 13 bios 1023/254/63 (max cyl/hd values) Interrupt 13 ext 16383/016/63 (number of cyl/hd) 40188960 total number of sectors reported via interrupt 13 from the BIOS N Start LBA Length Start C/H/S End C/H/S boot Partition type 1 P 000000063 001333332 0000/001/01 0082/254/63 06 Fat16 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 dd_copy (copy) Command: dd if=/dev/ad1s1 of=/dev/ad3s1 bs=512 1236942+0 records in 1236942+0 records out 633314304 bytes transferred in 288.918185 secs (2192020 bytes/sec) === Error messages === no message = = = Measurement Logs = = = Sectors Compared 1236942 Sectors Differ 0 Diffs range: Source (1236942) has 96390 fewer sectors than destination (1333332) Zero fill: 0 Src Byte fill (F5): 0 Dst Byte fill (F7): 96390 Other fill: 0 Other no fill: 0 Hash after test: 83A0002816BBF089F8BE33C41C92C3B5A0F42A54
Expected Results:	Source disk is unchanged src compares qualified equal to dst
Actual Results:	No anomalies
Analysis:	Expected results achieved

Case DI(Linux)-05 for FreeBSD 4.4 dd	
Case Summary:	Copy a LINUX IDE source disk to a LINUX IDE destination disk and the source contains a FAT32 partition where the source disk is the same size as the destination
Tester Name:	JRL
Test Date:	Sun Oct 20 11:22:35 2002

PC:	HecRamsey
Disks:	Source: DOS Drive 80 Physical Label A5 Destination: DOS Drive 81 Physical Label A8 Image media: DOS Drive 80 Physical Label 9E A5 is a WDC WD200BB-00AUA1 with 39102336 sectors A8 is a WDC WD200BB-00AUA1 with 39102336 sectors 9E is a WDC WD200BB-32CFC0 with 39102336 sectors Windows 98 [Version 4.10.2222] DOS boot floppy with run scripts CD-ROM with PartitionMagic Pro 6.0 and FS-TST Release 1.0
Source disk setup:	Fat32 only Disk: A5 Host: JudgeDee Operator: JRL OS: NoOs Options: none Date: Mon Apr 15 14:35:04 2002 cmd: Z:\ss\DISKWIPE.EXE A5 JudgeDee 80 A5 /src /new_log X:\pm\pqmagic /cmd=X:\pm\f32-src.txt No OS loaded, FAT32 partition only cmd: Z:\ss\DISKHASH.EXE A5 JudgeDee 80 /before /new_log Disk hash = 3DE5C01B5BB337EA3E6CF9BC25EB844F5D00FD14
Destination Setup:	Z:\ss\DISKWIPE.EXE 05 HecRamsey 81 A8 /noask /dst /new_log /comment JRL
Execute:	Boot to DOS Z:\ss\DISKWIPE.EXE 05 HecRamsey 81 A8 /noask /dst /new_log /comment JRL Boot to FreeBSD dd_copy (copy) dd if=/dev/ad1s1 of=/dev/ad3s1 bs=512 Shutdown FreeBSD, Boot to DOS Z:\ss\PARTCMP.EXE 05 HecRamsey 80 A5 81 A8 /new_log /comment JRL /select 1 1 Z:\ss\DISKHASH.EXE 05 Wimsey 80 /comment A5(JRL) /new_log /after
Log files loc:	test-archive/dd/freebsd-4.4/05
Log File Highlights:	Source disk Drive 0x80, BIOS: Extensions Present Interrupt 13 bios 1022/254/63 (max cyl/hd values) Interrupt 13 ext 16383/016/63 (number of cyl/hd) 39102336 total number of sectors reported via interrupt 13 from the BIOS N Start LBA Length Start C/H/S End C/H/S boot Partition type 1 P 000000063 001236942 0000/001/01 0076/254/63 Boot 0B Fat32 2 X 001429785 037061955 0089/000/01 1023/254/63 0F extended 3 S 000000063 000208782 0089/001/01 0101/254/63 83 Linux 4 x 000208845 000144585 0102/000/01 0110/254/63 05 extended 5 S 000000063 000144522 0102/001/01 0110/254/63 0B Fat32 6 x 000771120 000192780 0137/000/01 0148/254/63 05 extended 7 S 000000063 000192717 0137/001/01 0148/254/63 16 other 8 S 000000000 000000000 0000/000/00 0000/000/00 00 empty entry 9 P 038491740 000064260 1023/000/01 1023/254/63 83 Linux 10 P 038684520 000417690 1023/000/01 1023/254/63 82 Linux swap Destination disk Drive 0x81, BIOS: Extensions Present Interrupt 13 bios 1022/254/63 (max cyl/hd values) Interrupt 13 ext 16383/016/63 (number of cyl/hd) 39102336 total number of sectors reported via interrupt 13 from the BIOS N Start LBA Length Start C/H/S End C/H/S boot Partition type 1 P 000000063 001236942 0000/001/01 0076/254/63 0B Fat32 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 dd_copy (copy) Command: dd if=/dev/ad1s1 of=/dev/ad3s1 bs=512 1236942+0 records in 1236942+0 records out 633314304 bytes transferred in 284.536470 secs (2225776 bytes/sec) === Error messages === no message = = = = Measurement Logs = = = = Sectors Compared 1236942 Sectors Differ 0 Diffs range: Hash after test: 3DE5C01B5BB337EA3E6CF9BC25EB844F5D00FD14
Expected	Source disk is unchanged

Results:	src compares equal to dst
Actual Results:	No anomalies
Analysis:	Expected results achieved

Case DI(Linux)-06 for FreeBSD 4.4 dd	
Case Summary:	Copy a LINUX IDE source disk to a LINUX IDE destination disk and the source contains a LINUX partition where the source disk is larger than the destination
Tester Name:	JRL
Test Date:	Fri Nov 01 15:12:47 2002
PC:	AndWife
Disks:	Source: DOS Drive 80 Physical Label F5 Destination: DOS Drive 81 Physical Label 62 Image media: DOS Drive 80 Physical Label 93 F5 is an IBM-DTLA-307020 with 40188960 sectors 62 is a WDCWD64AA with 12594960 sectors 93 is a WDC WD300BB-00CAA0 with 58633344 sectors Windows 98 [Version 4.10.2222] DOS boot floppy with run scripts CD-ROM with PartitionMagic Pro 6.0 and FS-TST Release 1.0
Source disk setup:	Dual boot Linux/Windows Me with EXT2 & Fat16 Disk: F5 Host: Cadfael Operator: JRL OS: WindowsMe/Linux Date: Sat Aug 11 11:13:43 2001 DISKWIPE.EXE F5_SRC Cadfael 80 F5 /src X:\pm\pqmagic /cmd=X:\pm\fat-src.txt Load Operating System to Source disk DISKHASH.EXE F5_SRC Cadfael 80 /before Disk hash = 83A0002816BBF089F8BE33C41C92C3B5A0F42A54
Destination Setup:	Z:\ss\DISKWIPE.EXE 06 AndWife 81 62 /noask /dst /new_log /comment JRL
Execute:	Boot to DOS Z:\ss\DISKWIPE.EXE 06 AndWife 81 62 /noask /dst /new_log /comment JRL Boot to FreeBSD dd_copy (copy) dd if=/dev/adls3 of=/dev/ad3s2 bs=512 end of device Shutdown FreeBSD, Boot to DOS Z:\ss\PARTCMP.EXE 06 AndWife 80 F5 81 62 /new_log /comment JRL /select 9 2 Z:\ss\DISKHASH.EXE 06 Rumpole 80 /comment F5(JRL) /new_log /after
Log files loc:	test-archive/dd/freebsd-4.4/06
Log File Highlights:	Source disk Drive 0x80, BIOS: Extensions Present Interrupt 13 bios 1022/254/63 (max cyl/hd values) Interrupt 13 ext 16383/016/63 (number of cyl/hd) 40188960 total number of sectors reported via interrupt 13 from the BIOS N Start LBA Length Start C/H/S End C/H/S boot Partition type 1 P 000000063 001236942 0000/001/01 0076/254/63 Boot 06 Fat16 2 X 002249100 007181055 0140/000/01 0586/254/63 05 extended 3 S 000000063 000208782 0140/001/01 0152/254/63 83 Linux 4 x 000208845 000144585 0153/000/01 0161/254/63 05 extended 5 S 000000063 000144522 0153/001/01 0161/254/63 06 Fat16 6 x 004450005 000192780 0417/000/01 0428/254/63 05 extended 7 S 000000063 000192717 0417/001/01 0428/254/63 16 other 8 S 000000000 000000000 0000/000/00 0000/000/00 00 empty entry 9 P 009430155 006152895 0587/000/01 0969/254/63 83 Linux 10 P 039760875 000417690 1023/000/01 1023/254/63 82 Linux swap Destination disk Drive 0x81, BIOS: Extensions Present Interrupt 13 bios 0782/254/63 (max cyl/hd values) Interrupt 13 ext 13328/015/63 (number of cyl/hd) 12594960 total number of sectors reported via interrupt 13 from the BIOS N Start LBA Length Start C/H/S End C/H/S boot Partition type 1 P 000000063 001236942 0000/001/01 0076/254/63 06 Fat16 2 P 001237005 005944050 0077/000/01 0446/254/63 83 Linux 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

	dd_copy (copy) Command: dd if=/dev/ad1s3 of=/dev/ad3s2 bs=512 5944051+0 records in 5944050+0 records out 3043353600 bytes transferred in 12239.447636 secs (248651 bytes/sec) === Error messages === dd: /dev/ad3s2: end of device = = = Measurement Logs = = = Sectors Compared 5944050 Sectors Differ 0 Diffs range: Source (6152895) has 208845 more sectors than destination (5944050) Hash after test: 83A0002816BBF089F8BE33C41C92C3B5A0F42A54
Expected Results:	Source disk is unchanged src compares qualified equal to dst, src is truncated on dst truncation is logged
Actual Results:	No anomalies
Analysis:	Expected results achieved

Case DI(Linux)-07 for FreeBSD 4.4 dd	
Case Summary:	Copy a LINUX SCSI source disk to a LINUX SCSI destination disk where the source disk is smaller than the destination
Tester Name:	SN
Test Date:	Fri Oct 18 08:58:10 2002
PC:	Rumpole
Disks:	Source: DOS Drive 80 Physical Label E4 Destination: DOS Drive 81 Physical Label E6 Image media: DOS Drive 80 Physical Label 71 E4 is a QUANTUM ATLAS10K2-TY092J with 17938985 sectors E6 is a SEAGATE ST318404LC with 35843670 sectors 71 is a IC35L040AVER07-0 with 80418240 sectors Windows 98 [Version 4.10.2222] DOS boot floppy with run scripts CD-ROM with PartitionMagic Pro 6.0 and FS-TST Release 1.0
Source disk setup:	Windows 2000 with NTFS & Fat32 Disk: E4 Host: JudgeDee Operator: JRL OS: Windows 2000/NT Date: Sat Jul 21 16:58:28 2001 DISKWIPE.EXE E4_SRC JudgeDee 80 E4 /src /noask /comment Windows 2000 source disk X:\pm\pqmagic /cmd=X:\pm\nt-src.txt Load Operating System to Source disk cmd: X:\ss\DISKHASH.EXE Hash Wimsey 80 /comment E4 /new_log /before Disk hash = 25BF8AF6B2D3E0BD1909C96E368DB27F51C49CBF
Destination Setup:	Z:\ss\DISKWIPE.EXE 07 Rumpole 81 E6 /noask /dst /new_log /comment SN
Execute:	Boot to DOS Z:\ss\DISKWIPE.EXE 07 Rumpole 81 E6 /noask /dst /new_log /comment SN Boot to FreeBSD dd_copy (copy) dd if=/dev/da0 of=/dev/dal bs=512 Shutdown FreeBSD, Boot to DOS Z:\ss\DISKCOMP.EXE 07 Rumpole 80 E4 81 E6 /new_log /comment SN Z:\ss\DISKHASH.EXE 07 Rumpole 80 /comment E4(SN) /new_log /after
Log files loc:	test-archive/dd/freebsd-4.4/07
Log File Highlights:	dd_copy (copy) Command: dd if=/dev/da0 of=/dev/dal bs=512 17938985+0 records in 17938985+0 records out 9184760320 bytes transferred in 2066.398884 secs (4444815 bytes/sec) === Error messages === no message = = = Measurement Logs = = = Sectors Compared 17938985 Sectors Differ 0 Diffs range Source (17938985) has 17904685 fewer sectors than destination (35843670)

	Zero fill: 0 Src Byte fill (E4): 0 Dst Byte fill (E6): 17904685 Other fill: 0 Other no fill: 0 Hash after test: 25BF8AF6B2D3E0BD1909C96E368DB27F51C49CBF
Expected Results:	Source disk is unchanged src compares qualified equal to dst
Actual Results:	No anomalies
Analysis:	Expected results achieved

Case DI(Linux)-08 for FreeBSD 4.4 dd	
Case Summary:	Copy a LINUX SCSI source disk to a LINUX SCSI destination disk where the source disk is the same size as the destination
Tester Name:	JRL
Test Date:	Sat Oct 19 12:23:15 2002
PC:	Rumpole
Disks:	Source: DOS Drive 80 Physical Label E4 Destination: DOS Drive 81 Physical Label E2 Image media: DOS Drive 80 Physical Label 71 E4 is a QUANTUM ATLAS10K2-TY092J with 17938985 sectors E2 is a QUANTUM ATLAS10K2-TY092J with 17938985 sectors 71 is a IC35L040AVER07-0 with 80418240 sectors Windows 98 [Version 4.10.2222] DOS boot floppy with run scripts CD-ROM with PartitionMagic Pro 6.0 and FS-TST Release 1.0
Source disk setup:	Windows 2000 with NTFS & Fat32 Disk: E4 Host: JudgeDee Operator: JRL OS: Windows 2000/NT Date: Sat Jul 21 16:58:28 2001 DISKWIPE.EXE E4_SRC JudgeDee 80 E4 /src /noask /comment Windows 2000 source disk X:\pm\pqmagic /cmd=X:\pm\nt-src.txt Load Operating System to Source disk cmd: X:\ss\DISKHASH.EXE Hash Wimsey 80 /comment E4 /new_log /before Disk hash = 25BF8AF6B2D3E0BD1909C96E368DB27F51C49CBF
Destination Setup:	Z:\ss\DISKWIPE.EXE 08 Rumpole 81 E2 /noask /dst /new_log /comment JRL
Execute:	Boot to DOS Z:\ss\DISKWIPE.EXE 08 Rumpole 81 E2 /noask /dst /new_log /comment JRL Boot to FreeBSD dd_copy (copy) dd if=/dev/da0 of=/dev/dal bs=512 Shutdown FreeBSD, Boot to DOS Z:\ss\DISKCOMP.EXE 08 Rumpole 80 E4 81 E2 /new_log /comment JRL Z:\ss\DISKHASH.EXE 08 Rumpole 80 /comment E4(JRL) /new_log /after
Log files loc:	test-archive/dd/freebsd-4.4/08
Log File Highlights:	dd_copy (copy) Command: dd if=/dev/da0 of=/dev/dal bs=512 17938985+0 records in 17938985+0 records out 9184760320 bytes transferred in 4245.450263 secs (2163436 bytes/sec) === Error messages === no message = = = = Measurement Logs = = = = Sectors Compared 17938985 Sectors Differ 0 Diffs range Hash after test: 25BF8AF6B2D3E0BD1909C96E368DB27F51C49CBF
Expected Results:	Source disk is unchanged src compares equal to dst
Actual Results:	No anomalies
Analysis:	Expected results achieved

Case DI(Linux)-09 for FreeBSD 4.4 dd	
Case Summary:	Copy a LINUX SCSI source disk

	to a LINUX SCSI destination disk where the source disk is larger than the destination
Tester Name:	JRL
Test Date:	Sat Oct 19 15:00:59 2002
PC:	HecRamsey
Disks:	Source: DOS Drive 80 Physical Label E3 Destination: DOS Drive 81 Physical Label EB Image media: DOS Drive 80 Physical Label 9E E3 is a QUANTUM ATLAS10K2-TY092J with 17938985 sectors EB is a SEAGATE ST39204LC with 17921835 sectors 9E is a WDC WD200BB-32CFC0 with 39102336 sectors Windows 98 [Version 4.10.2222] DOS boot floppy with run scripts CD-ROM with PartitionMagic Pro 6.0 and FS-TST Release 1.0
Source disk setup:	Dual boot Linux/Windows Me with EXT2 & Fat16 Disk: E3 Host: Cadfael Operator: JRL OS: Linux Red Hat 7.1/Windows Me Date: Sat Jul 21 16:17:29 2001 DISKWIPE.EXE E3_SRC Rumpole 80 E3 /src /new_log X:\pm\pqmagic /cmd=X:\pm\fat-src.txt Load Operating System to Source disk DISKHASH.EXE E3_SRC Rumpole 80 /before Disk hash = 0F9DACDA6C63D197C048782003D324108CEC7AB0
Destination Setup:	Z:\ss\DISKWIPE.EXE 09 HecRamsey 81 EB /noask /dst /new_log /comment JRL
Execute:	Boot to DOS Z:\ss\DISKWIPE.EXE 09 HecRamsey 81 EB /noask /dst /new_log /comment JRL Boot to FreeBSD dd_copy (copy) dd if=/dev/da0 of=/dev/dal bs=512 end of device Shutdown FreeBSD, Boot to DOS Z:\ss\DISKCOMP.EXE 09 Rumpole 80 E3 81 EB /new_log /comment JRL Z:\ss\DISKHASH.EXE 09 Rumpole 80 /comment E3(JRL) /new_log /after
Log files loc:	test-archive/dd/freebsd-4.4/09
Log File Highlights:	dd_copy (copy) Command: dd if=/dev/da0 of=/dev/dal bs=512 17921836+0 records in 17921835+0 records out 9175979520 bytes transferred in 2063.534783 secs (4446729 bytes/sec) === Error messages === dd: /dev/dal: end of device = = = Measurement Logs = = = Sectors Compared 17921835 Sectors Differ 0 Diffs range Source (17938985) has 17150 more sectors than destination (17921835) Hash after test: 0F9DACDA6C63D197C048782003D324108CEC7AB0
Expected Results:	Source disk is unchanged src compares qualified equal to dst, src is truncated on dst truncation is logged
Actual Results:	No anomalies
Analysis:	Expected results achieved

Case DI(Linux)-10 for FreeBSD 4.4 dd	
Case Summary:	Copy a LINUX SCSI source disk to a LINUX SCSI destination disk and the source contains a NTFS partition where the source disk is smaller than the destination
Tester Name:	JRL
Test Date:	Thu Nov 07 13:40:18 2002
PC:	Cadfael
Disks:	Source: DOS Drive 80 Physical Label 31 Destination: DOS Drive 81 Physical Label 33 Image media: DOS Drive 80 Physical Label 7A 31 is a FUJITSU MAG3091L SUN9.0G with 17689266 sectors 33 is a FUJITSU MAG3091L SUN9.0G with 17689266 sectors 7A is a MAXTOR 6L040J2 with 78177792 sectors

	Windows 98 [Version 4.10.2222] DOS boot floppy with run scripts CD-ROM with PartitionMagic Pro 6.0 and FS-TST Release 1.0
Source disk setup:	NTFS only Disk: 31 Host: Cadfael Operator: JRL OS: NT_No_os Options: none Date: Thu Nov 07 12:05:40 2002 cmd: Z:\ss\DISKWIPE.EXE 31 Cadfael 80 31 /src /new_log X:\pm\pqmagic /cmd=X:\pm\nt-src.txt No OS loaded, NTFS partition only cmd: Z:\ss\DISKHASH.EXE 31 Cadfael 80 /before /new_log Disk hash = 595739865F30C86E3CE5BA03BF1895E008721B8D
Destination Setup:	Z:\ss\DISKWIPE.EXE 10 Cadfael 81 33 /noask /dst /new_log /comment JRL
Execute:	Boot to DOS Z:\ss\DISKWIPE.EXE 10 Cadfael 81 33 /noask /dst /new_log /comment JRL A:\SECHASH.EXE 10 Cadfael 81 /first 1237005 /last 1333394 /log prehash.txt Boot to FreeBSD dd_copy (copy) dd if=/dev/da0s1 of=/dev/dals1 bs=512 A:\SECHASH.EXE 10 Cadfael 81 /first 1237005 /last 1333394 /log posthash.txt Shutdown FreeBSD, Boot to DOS Z:\ss\PARTCMP.EXE 10 Cadfael 80 31 81 33 /new_log /comment JRL /select 1 1 Z:\ss\DISKHASH.EXE 10 Cadfael 80 /comment 31(JRL) /new_log /after
Log files loc:	test-archive/dd/freebsd-4.4/10
Log File Highlights:	Source disk Drive 0x80, BIOS: Extensions Present Interrupt 13 bios 1022/254/63 (max cyl/hd values) Interrupt 13 ext 01023/255/63 (number of cyl/hd) 17689267 total number of sectors reported via interrupt 13 from the BIOS N Start LBA Length Start C/H/S End C/H/S boot Partition type 1 P 000000063 001236942 0000/001/01 0076/254/63 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 Destination disk Drive 0x81, BIOS: Extensions Present Interrupt 13 bios 1022/254/63 (max cyl/hd values) Interrupt 13 ext 01023/255/63 (number of cyl/hd) 17689267 total number of sectors reported via interrupt 13 from the BIOS N Start LBA Length Start C/H/S End C/H/S boot Partition type 1 P 000000063 001333332 0000/001/01 0082/254/63 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 dd_copy (copy) Command: dd if=/dev/da0s1 of=/dev/dals1 bs=512 1236942+0 records in 1236942+0 records out 633314304 bytes transferred in 7422.884209 secs (85319 bytes/sec) === Error messages === no message = = = Measurement Logs = = = Sectors Compared 1236942 Sectors Differ 0 Diffs range: Source (1236942) has 96390 fewer sectors than destination (1333332) Zero fill: 0 Src Byte fill (31): 0 Dst Byte fill (33): 96389 Other fill: 0 Other no fill: 1 Excess Sectors Hashes: Before dd DA90E58BF899C870F385368BD1544A3E7D4D75BC After dd DA90E58BF899C870F385368BD1544A3E7D4D75BC Hash after test: 595739865F30C86E3CE5BA03BF1895E008721B8D
Expected	Source disk is unchanged

Results:	src compares qualified equal to dst
Actual Results:	No anomalies
Analysis:	Expected results achieved

Case DI(Linux)-11 for FreeBSD 4.4 dd	
Case Summary:	Copy a LINUX SCSI source disk to a LINUX SCSI destination disk and the source contains a FAT32 partition where the source disk is the same size as the destination
Tester Name:	SN
Test Date:	Fri Nov 01 11:09:05 2002
PC:	Wimsey
Disks:	Source: DOS Drive 80 Physical Label 1F Destination: DOS Drive 81 Physical Label E2 Image media: DOS Drive 80 Physical Label 7A 1F is a QUANTUM ATLAS10K3_18_SCA with 35916547 sectors E2 is a QUANTUM ATLAS10K2-TY092J with 17938985 sectors 7A is a MAXTOR 6L040J2 with 78177792 sectors Windows 98 [Version 4.10.2222] DOS boot floppy with run scripts CD-ROM with PartitionMagic Pro 6.0 and FS-TST Release 1.0
Source disk setup:	Linux EXT2 & Fat32 Disk: 1F Host: Paladin Operator: JRL OS: No_os Options: none Date: Thu Oct 24 10:29:25 2002 cmd: Z:\ss\DISKWIPE.EXE 1F Paladin 80 1F /src /new_log X:\pm\pvmagic /cmd=X:\pm\f32-src.txt Load Operating System to Source disk cmd: Z:\ss\DISKHASH.EXE 1F Paladin 80 /before /new_log Disk hash = D6AD94C3E8C2BE7AC4F60C4CE146617BC757D34D
Destination Setup:	Z:\ss\DISKWIPE.EXE 11 Wimsey 81 E2 /noask /dst /new_log /comment SN
Execute:	Boot to DOS Z:\ss\DISKWIPE.EXE 11 Wimsey 81 E2 /noask /dst /new_log /comment SN Boot to FreeBSD dd_copy (copy) dd if=/dev/da0s1 of=/dev/dals1 bs=512 Shutdown FreeBSD, Boot to DOS Z:\ss\PARTCMP.EXE 11 Wimsey 80 1F 81 E2 /new_log /comment SN /select 1 1 Z:\ss\DISKHASH.EXE 11 Wimsey 80 /comment 1F(SN) /new_log /after
Log files loc:	test-archive/dd/freebsd-4.4/11
Log File Highlights:	Source disk Drive 0x80, BIOS: Extensions Present Interrupt 13 bios 1022/254/63 (max cyl/hd values) Interrupt 13 ext 01023/255/63 (number of cyl/hd) 35916548 total number of sectors reported via interrupt 13 from the BIOS N Start LBA Length Start C/H/S End C/H/S boot Partition type 1 P 000000063 001236942 0000/001/01 0076/254/63 Boot 0B Fat32 2 X 001429785 033865020 0089/000/01 1023/254/63 0F extended 3 S 000000063 000208782 0089/001/01 0101/254/63 83 Linux 4 x 000208845 000144585 0102/000/01 0110/254/63 05 extended 5 S 000000063 000144522 0102/001/01 0110/254/63 0B Fat32 6 x 000771120 000192780 0137/000/01 0148/254/63 05 extended 7 S 000000063 000192717 0137/001/01 0148/254/63 16 other 8 S 000000000 000000000 0000/000/00 0000/000/00 00 empty entry 9 P 035294805 000064260 1023/000/01 1023/254/63 83 Linux 10 P 035487585 000417690 1023/000/01 1023/254/63 82 Linux swap Destination disk Drive 0x81, BIOS: Extensions Present Interrupt 13 bios 1022/254/63 (max cyl/hd values) Interrupt 13 ext 01023/255/63 (number of cyl/hd) 17938985 total number of sectors reported via interrupt 13 from the BIOS N Start LBA Length Start C/H/S End C/H/S boot Partition type 1 P 000000063 001236942 0000/001/01 0076/254/63 0B Fat32 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

	dd_copy (copy) Command: dd if=/dev/da0s1 of=/dev/dals1 bs=512 1236942+0 records in 1236942+0 records out 633314304 bytes transferred in 289.974692 secs (2184033 bytes/sec) === Error messages === no message = = = Measurement Logs = = = Sectors Compared 1236942 Sectors Differ 0 Diffs range: Hash after test: D6AD94C3E8C2BE7AC4F60C4CE146617BC757D34D
Expected Results:	Source disk is unchanged src compares equal to dst
Actual Results:	No anomalies
Analysis:	Expected results achieved

Case DI(Linux)-12 for FreeBSD 4.4 dd	
Case Summary:	Copy a LINUX SCSI source disk to a LINUX SCSI destination disk and the source contains a FAT16 partition where the source disk is larger than the destination
Tester Name:	JRL
Test Date:	Thu Jan 09 11:33:16 2003
PC:	Rumpole
Disks:	Source: DOS Drive 80 Physical Label E3 Destination: DOS Drive 81 Physical Label E2 Image media: DOS Drive 80 Physical Label 9E E3 is a QUANTUM ATLAS10K2-TY092J with 17938985 sectors E2 is a QUANTUM ATLAS10K2-TY092J with 17938985 sectors 9E is a WDC WD200BB-32CFC0 with 39102336 sectors Windows 98 [Version 4.10.2222] DOS boot floppy with run scripts CD-ROM with PartitionMagic Pro 6.0 and FS-TST Release 1.0
Source disk setup:	Dual boot Linux/Windows Me with EXT2 & Fat16 Disk: E3 Host: Cadfael Operator: JRL OS: Linux Red Hat 7.1/Windows Me Date: Sat Jul 21 16:17:29 2001 DISKWIPE.EXE E3_SRC Rumpole 80 E3 /src /new_log X:\pm\pqmagic /cmd=X:\pm\fat-src.txt Load Operating System to Source disk DISKHASH.EXE E3_SRC Rumpole 80 /before Disk hash = 0F9DACDA6C63D197C048782003D324108CEC7AB0
Destination Setup:	Z:\ss\DISKWIPE.EXE 12 Rumpole 81 E2 /noask /dst /new_log /comment JRL
Execute:	Boot to DOS Z:\ss\DISKWIPE.EXE 12 Rumpole 81 E2 /noask /dst /new_log /comment JRL Boot to FreeBSD dd_copy (copy) dd if=/dev/da0s1 of=/dev/dals1 bs=512 end of device Shutdown FreeBSD, Boot to DOS Z:\ss\PARTCMP.EXE 12 Rumpole 80 E3 81 E2 /new_log /comment JRL /select 1 1 Z:\ss\DISKHASH.EXE 12 Rumpole 80 /comment E3(JRL) /new_log /after
Log files loc:	test-archive/dd/freebsd-4.4/12
Log File Highlights:	Source disk Drive 0x80, BIOS: Extensions Present Interrupt 13 bios 1022/254/63 (max cyl/hd values) Interrupt 13 ext 01023/255/63 (number of cyl/hd) 17938985 total number of sectors reported via interrupt 13 from the BIOS N Start LBA Length Start C/H/S End C/H/S boot Partition type 1 P 000000063 001236942 0000/001/01 0076/254/63 Boot 06 Fat16 2 X 002249100 007181055 0140/000/01 0586/254/63 05 extended 3 S 000000063 000208782 0140/001/01 0152/254/63 83 Linux 4 x 000208845 000144585 0153/000/01 0161/254/63 05 extended 5 S 000000063 000144522 0153/001/01 0161/254/63 06 Fat16 6 x 004450005 000192780 0417/000/01 0428/254/63 05 extended 7 S 000000063 000192717 0417/001/01 0428/254/63 16 other

	<pre> 8 S 000000000 000000000 0000/000/00 0000/000/00 00 empty entry 9 P 009430155 006152895 0587/000/01 0969/254/63 83 Linux 10 P 017510850 000417690 1023/000/01 1023/254/63 82 Linux swap Destination disk Drive 0x81, BIOS: Extensions Present Interrupt 13 bios 1022/254/63 (max cyl/hd values) Interrupt 13 ext 01023/255/63 (number of cyl/hd) 17938985 total number of sectors reported via interrupt 13 from the BIOS N Start LBA Length Start C/H/S End C/H/S boot Partition type 1 P 000000063 001140552 0000/001/01 0070/254/63 06 Fat16 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 dd_copy (copy) Command: dd if=/dev/da0s1 of=/dev/dals1 bs=512 1140553+0 records in 1140552+0 records out 583962624 bytes transferred in 267.435125 secs (2183567 bytes/sec) === Error messages === dd: /dev/dals1: end of device = = = Measurement Logs = = = Sectors Compared 1140552 Sectors Differ 0 Diffs range: Source (1236942) has 96390 more sectors than destination (1140552) Hash after test: 0F9DACDA6C63D197C048782003D324108CEC7AB0 </pre>
Expected Results:	Source disk is unchanged src compares qualified equal to dst, src is truncated on dst truncation is logged
Actual Results:	No anomalies
Analysis:	Expected results achieved

Case DI(Linux)-13 for FreeBSD 4.4 dd	
Case Summary:	Copy a LINUX IDE source disk to a LINUX SCSI destination disk where the source disk is smaller than the destination
Tester Name:	JRL
Test Date:	Wed Oct 23 08:00:55 2002
PC:	McMillan
Disks:	Source: DOS Drive 80 Physical Label F6 Destination: DOS Drive 81 Physical Label CC Image media: DOS Drive 80 Physical Label 71 F6 is an IBM-DTLA-307020 with 40188960 sectors CC is a SEAGATE ST336705LC with 71687370 sectors 71 is a IC35L040AVER07-0 with 80418240 sectors Windows 98 [Version 4.10.2222] DOS boot floppy with run scripts CD-ROM with PartitionMagic Pro 6.0 and FS-TST Release 1.0
Source disk setup:	Windows 2000 with NTFS & Fat32 Disk: F6 Host: Wimsey Operator: JRL OS: Windows 2000 Date: Sat Jul 21 15:53:12 2001 DISKWIPE.EXE F6_SRC Wimsey 80 F6 /src /new_log /noask /comment Windows 2000/NT source X:\pm\pqmagic /cmd=X:\pm\nt-src.txt Load Operating System to Source disk DISKHASH.EXE LX-27 Morse 80 /before Disk hash = 8034683D5D55BA51409AC7B5CB0845CA2CF6B235
Destination Setup:	Z:\ss\DISKWIPE.EXE 13 McMillan 81 CC /noask /dst /new_log /comment JRL
Execute:	Boot to DOS Z:\ss\DISKWIPE.EXE 13 McMillan 81 CC /noask /dst /new_log /comment JRL Boot to FreeBSD dd_copy (copy) dd if=/dev/ad3 of=/dev/da0 bs=512 Shutdown FreeBSD, Boot to DOS Z:\ss\DISKCOMP.EXE 13 McMillan 80 F6 81 CC /new_log /comment JRL Z:\ss\DISKHASH.EXE 13 JudgeDee 80 /comment F6(JRL) /new_log /after
Log files loc:	test-archive/dd/freebsd-4.4/13

Log File Highlights:	dd_copy (copy) Command: dd if=/dev/ad3 of=/dev/da0 bs=512 40188960+0 records in 40188960+0 records out 20576747520 bytes transferred in 5914.794439 secs (3478861 bytes/sec) === Error messages === no message = = = Measurement Logs = = = Sectors Compared 40188960 Sectors Differ 0 Diffs range Source (40188960) has 31498410 fewer sectors than destination (71687370) Zero fill: 0 Src Byte fill (F6): 0 Dst Byte fill (CC): 31498410 Other fill: 0 Other no fill: 0 Hash after test: 8034683D5D55BA51409AC7B5CB0845CA2CF6B235
Expected Results:	Source disk is unchanged src compares qualified equal to dst
Actual Results:	No anomalies
Analysis:	Expected results achieved

Case DI(Linux)-14 for FreeBSD 4.4 dd	
Case Summary:	Copy a LINUX IDE source disk to a LINUX SCSI destination disk where the source disk is larger than the destination
Tester Name:	SN
Test Date:	Mon Oct 21 14:36:30 2002
PC:	McCloud
Disks:	Source: DOS Drive 80 Physical Label A5 Destination: DOS Drive 81 Physical Label 13 Image media: DOS Drive 80 Physical Label 93 A5 is a WDC WD200BB-00AUA1 with 39102336 sectors 13 is a FUJITSU MAN3184MC with 35885447 sectors 93 is a WDC WD300BB-00CAA0 with 58633344 sectors Windows 98 [Version 4.10.2222] DOS boot floppy with run scripts CD-ROM with PartitionMagic Pro 6.0 and FS-TST Release 1.0
Source disk setup:	Fat32 only Disk: A5 Host: JudgeDee Operator: JRL OS: NoOs Options: none Date: Mon Apr 15 14:35:04 2002 cmd: Z:\ss\DISKWIPE.EXE A5 JudgeDee 80 A5 /src /new_log X:\pm\pqmagic /cmd=X:\pm\f32-src.txt No OS loaded, FAT32 partition only cmd: Z:\ss\DISKHASH.EXE A5 JudgeDee 80 /before /new_log Disk hash = 3DE5C01B5BB337EA3E6CF9BC25EB844F5D00FD14
Destination Setup:	Z:\ss\DISKWIPE.EXE 14 McCloud 81 13 /noask /dst /new_log /comment SN
Execute:	Boot to DOS Z:\ss\DISKWIPE.EXE 14 McCloud 81 13 /noask /dst /new_log /comment SN Boot to FreeBSD dd_copy (copy) dd if=/dev/ad1 of=/dev/da0 bs=512 end of device Shutdown FreeBSD, Boot to DOS Z:\ss\DISKCOMP.EXE 14 Wimsey 80 A5 81 13 /new_log /comment SN Z:\ss\DISKHASH.EXE 14 Wimsey 80 /comment A5(SN) /new_log /after
Log files loc:	test-archive/dd/freebsd-4.4/14
Log File Highlights:	dd_copy (copy) Command: dd if=/dev/ad1 of=/dev/da0 bs=512 35885449+0 records in 35885448+0 records out 18373349376 bytes transferred in 5352.035418 secs (3432965 bytes/sec) === Error messages === dd: /dev/da0: end of device

	<pre> = = = Measurement Logs = = = Sectors Compared 35885448 Sectors Differ 0 Diffs range Source (39102336) has 3216888 more sectors than destination (35885448) Hash after test: 3DE5C01B5BB337EA3E6CF9BC25EB844F5D00FD14 </pre>
Expected Results:	Source disk is unchanged src compares qualified equal to dst, src is truncated on dst truncation is logged
Actual Results:	No anomalies
Analysis:	Expected results achieved

Case DI(Linux)-15 for FreeBSD 4.4 dd	
Case Summary:	Copy a LINUX SCSI source disk to a LINUX IDE destination disk where the source disk is smaller than the destination
Tester Name:	JRL
Test Date:	Tue Oct 22 17:33:18 2002
PC:	Cadfael
Disks:	<pre> Source: DOS Drive 80 Physical Label E3 Destination: DOS Drive 81 Physical Label F7 Image media: DOS Drive 80 Physical Label 20 E3 is a QUANTUM ATLAS10K2-TY092J with 17938985 sectors F7 is an IBM-DTLA-307020 with 40188960 sectors 20 is a SEAGATE ST373405LC with 143374740 sectors Windows 98 [Version 4.10.2222] DOS boot floppy with run scripts CD-ROM with PartitionMagic Pro 6.0 and FS-TST Release 1.0 </pre>
Source disk setup:	<pre> Dual boot Linux/Windows Me with EXT2 & Fat16 Disk: E3 Host: Cadfael Operator: JRL OS: Linux Red Hat 7.1/Windows Me Date: Sat Jul 21 16:17:29 2001 DISKWIPE.EXE E3_SRC Rumpole 80 E3 /src /new_log X:\pm\pqmagic /cmd=X:\pm\fat-src.txt Load Operating System to Source disk DISKHASH.EXE E3_SRC Rumpole 80 /before Disk hash = 0F9DACDA6C63D197C048782003D324108CEC7AB0 </pre>
Destination Setup:	Z:\ss\DISKWIPE.EXE 15 Cadfael 81 F7 /noask /dst /new_log /comment JRL
Execute:	<pre> Boot to DOS Z:\ss\DISKWIPE.EXE 15 Cadfael 81 F7 /noask /dst /new_log /comment JRL Boot to FreeBSD dd_copy (copy) dd if=/dev/dal of=/dev/ad0 bs=512 Shutdown FreeBSD, Boot to DOS z:\ss\DISKCOMP.EXE 15 Wimsey 81 E3 80 F7 /new_log /comment JRL Z:\ss\DISKHASH.EXE 15 Wimsey 80 /comment E3(JRL) /new_log /after </pre>
Log files loc:	test-archive/dd/freebsd-4.4/15
Log File Highlights:	<pre> dd_copy (copy) Command: dd if=/dev/dal of=/dev/ad0 bs=512 17938985+0 records in 17938985+0 records out 9184760320 bytes transferred in 3447.427583 secs (2664236 bytes/sec) === Error messages === no message = = = Measurement Logs = = = Sectors Compared 17938985 Sectors Differ 0 Diffs range Source (17938985) has 22249975 fewer sectors than destination (40188960) Zero fill: 0 Src Byte fill (E3): 0 Dst Byte fill (F7): 22249975 Other fill: 0 Other no fill: 0 Hash after test: 0F9DACDA6C63D197C048782003D324108CEC7AB0 </pre>
Expected Results:	Source disk is unchanged src compares qualified equal to dst

Actual Results:	No anomalies
Analysis:	Expected results achieved

Case DI(Linux)-16 for FreeBSD 4.4 dd	
Case Summary:	Copy a LINUX SCSI source disk to a LINUX IDE destination disk where the source disk is larger than the destination
Tester Name:	SN
Test Date:	Fri Nov 01 11:59:21 2002
PC:	HecRamsey
Disks:	Source: DOS Drive 80 Physical Label E3 Destination: DOS Drive 81 Physical Label 63 Image media: DOS Drive 80 Physical Label 71 E3 is a QUANTUM ATLAS10K2-TY092J with 17938985 sectors 63 is a WDCWD64AA with 12594960 sectors 71 is a IC35L040AVER07-0 with 80418240 sectors Windows 98 [Version 4.10.2222] DOS boot floppy with run scripts CD-ROM with PartitionMagic Pro 6.0 and FS-TST Release 1.0
Source disk setup:	Dual boot Linux/Windows Me with EXT2 & Fat16 Disk: E3 Host: Cadfael Operator: JRL OS: Linux Red Hat 7.1/Windows Me Date: Sat Jul 21 16:17:29 2001 DISKWIPE.EXE E3_SRC Rumpole 80 E3 /src /new_log X:\pm\pqmagic /cmd=X:\pm\fat-src.txt Load Operating System to Source disk DISKHASH.EXE E3_SRC Rumpole 80 /before Disk hash = 0F9DACDA6C63D197C048782003D324108CEC7AB0
Destination Setup:	Z:\ss\DISKWIPE.EXE 16 HecRamsey 81 63 /noask /dst /new_log /comment SN
Execute:	Boot to DOS Z:\ss\DISKWIPE.EXE 16 HecRamsey 81 63 /noask /dst /new_log /comment SN Boot to FreeBSD dd_copy (copy) dd if=/dev/da0 of=/dev/ad3 bs=512 end of device Shutdown FreeBSD, Boot to DOS Z:\ss\DISKCOMP.EXE 16 HecRamsey 81 E3 80 63 /new_log /comment SN Z:\ss\DISKHASH.EXE 16 HecRamsey 80 /comment E3(SN) /new_log /after
Log files loc:	test-archive/dd/freebsd-4.4/16
Log File Highlights:	dd_copy (copy) Command: dd if=/dev/da0 of=/dev/ad3 bs=512 12594961+0 records in 12594960+0 records out 6448619520 bytes transferred in 21999.568397 secs (293125 bytes/sec) === Error messages === dd: /dev/ad3: end of device = = = Measurement Logs = = = Sectors Compared 12594960 Sectors Differ 0 Diffs range Source (17938985) has 5344025 more sectors than destination (12594960) Hash after test: 0F9DACDA6C63D197C048782003D324108CEC7AB0
Expected Results:	Source disk is unchanged src compares qualified equal to dst, src is truncated on dst truncation is logged
Actual Results:	No anomalies
Analysis:	Expected results achieved

Case DI(Linux)-18 for FreeBSD 4.4 dd	
Case Summary:	Create an image from a LINUX IDE source disk to a LINUX IDE destination disk where the source disk is smaller than the destination
Tester Name:	JRL
Test Date:	Thu Jan 09 19:12:18 2003
PC:	Wimsey
Disks:	Source: DOS Drive 80 Physical Label F6

	Destination: DOS Drive 81 Physical Label 90 Image media: DOS Drive 80 Physical Label 7A F6 is an IBM-DTLA-307020 with 40188960 sectors 90 is a WDC WD300BB-00CAA0 with 58633344 sectors 7A is a MAXTOR 6L040J2 with 78177792 sectors Windows 98 [Version 4.10.2222] DOS boot floppy with run scripts CD-ROM with PartitionMagic Pro 6.0 and FS-TST Release 1.0
Source disk setup:	Windows 2000 with NTFS & Fat32 Disk: F6 Host: Wimsey Operator: JRL OS: Windows 2000 Date: Sat Jul 21 15:53:12 2001 DISKWIPE.EXE F6_SRC Wimsey 80 F6 /src /new_log /noask /comment Windows 2000/NT source X:\pm\pqmagic /cmd=X:\pm\nt-src.txt Load Operating System to Source disk DISKHASH.EXE LX-27 Morse 80 /before Disk hash = 8034683D5D55BA51409AC7B5CB0845CA2CF6B235
Destination Setup:	Z:\ss\DISKWIPE.EXE 18 Wimsey 81 90 /noask /dst /new_log /comment JRL
Execute:	Boot to DOS Z:\ss\DISKWIPE.EXE 18 Wimsey 81 90 /noask /dst /new_log /comment JRL Boot to FreeBSD dd_image ad1 ad3 18 (backup to image) (dd if=/dev/ad1 skip=0 count=1000000 bs=512 gzip ...) (dd if=/dev/ad1 skip=1000000 count=1000000 bs=512 gzip ...) (dd if=/dev/ad1 skip=2000000 count=1000000 bs=512 gzip ...) ... (restore from image) ... (gunzip ... dd of=/dev/ad3 seek=39000000 count=1000000 bs=512 ...) (gunzip ... dd of=/dev/ad3 seek=40000000 count=1000000 bs=512 ...) (gunzip ... dd of=/dev/ad3 seek=41000000 count=1000000 bs=512 ...) Shutdown FreeBSD, Boot to DOS Z:\ss\DISKCOMP.EXE 18 Wimsey 80 F6 81 90 /new_log /comment JRL Z:\ss\DISKHASH.EXE 18 Wimsey 80 /comment F6(JRL) /new_log /after
Log files loc:	test-archive/dd/freebsd-4.4/18
Log File Highlights:	dd_image ad1 ad3 18 (backup to image) dk-backup /dev/ad1 18 Sat Jan 11 02:15:31 EST 2003 (dd if=/dev/ad1 skip=0 count=1000000 bs=512 gzip ...) 1000000+0 records in 1000000+0 records out 512000000 bytes transferred in 130.180153 secs (3933011 bytes/sec) (dd if=/dev/ad1 skip=1000000 count=1000000 bs=512 gzip ...) 1000000+0 records in 1000000+0 records out 512000000 bytes transferred in 130.353574 secs (3927779 bytes/sec) ... (restore from image) ... 512000000 bytes transferred in 121.092793 secs (4228162 bytes/sec ...) (gunzip ... dd of=/dev/ad3 seek=40000000 count=1000000 bs=512 ...) 188960+0 records in 188960+0 records out 96747520 bytes transferred in 24.592533 secs (3934020 bytes/sec ...) (gunzip ... dd of=/dev/ad3 seek=41000000 count=1000000 bs=512 ...) 0+0 records in 0+0 records out 0 bytes transferred in 0.016688 secs (0 bytes/sec ...) Finish at Sat Jan 11 04:38:54 EST 2003 === Error messages === no message = = = = Measurement Logs = = = = Sectors Compared 40188960 Sectors Differ 0 Diffs range Source (40188960) has 18444384 fewer sectors than destination (58633344)

	Zero fill: 0 Src Byte fill (F6): 0 Dst Byte fill (90): 18444384 Other fill: 0 Other no fill: 0 Hash after test: 8034683D5D55BA51409AC7B5CB0845CA2CF6B235
Expected Results:	Source disk is unchanged src compares qualified equal to dst
Actual Results:	No anomalies
Analysis:	Expected results achieved

Case DI(Linux)-20 for FreeBSD 4.4 dd	
Case Summary:	Create an image from a LINUX IDE source disk to a LINUX IDE destination disk where the source disk is the same size as the destination
Tester Name:	JRL
Test Date:	Thu Jan 09 18:55:14 2003
PC:	Cadfael
Disks:	Source: DOS Drive 80 Physical Label F5 Destination: DOS Drive 81 Physical Label F7 Image media: DOS Drive 80 Physical Label 93 F5 is an IBM-DTLA-307020 with 40188960 sectors F7 is an IBM-DTLA-307020 with 40188960 sectors 93 is a WDC WD300BB-00CAA0 with 58633344 sectors Windows 98 [Version 4.10.2222] DOS boot floppy with run scripts CD-ROM with PartitionMagic Pro 6.0 and FS-TST Release 1.0
Source disk setup:	Dual boot Linux/Windows Me with EXT2 & Fat16 Disk: F5 Host: Cadfael Operator: JRL OS: WindowsMe/Linux Date: Sat Aug 11 11:13:43 2001 DISKWIPE.EXE F5_SRC Cadfael 80 F5 /src X:\pm\pqmagic /cmd=X:\pm\fat-src.txt Load Operating System to Source disk DISKHASH.EXE F5_SRC Cadfael 80 /before Disk hash = 83A0002816BBF089F8BE33C41C92C3B5A0F42A54
Destination Setup:	Z:\ss\DISKWIPE.EXE 20 Cadfael 81 F7 /noask /dst /new_log /comment JRL
Execute:	Boot to DOS Z:\ss\DISKWIPE.EXE 20 Cadfael 81 F7 /noask /dst /new_log /comment JRL Boot to FreeBSD dd_image ad1 ad3 20 (backup to image) (dd if=/dev/ad1 skip=0 count=1000000 bs=512 gzip ...) (dd if=/dev/ad1 skip=1000000 count=1000000 bs=512 gzip ...) (dd if=/dev/ad1 skip=2000000 count=1000000 bs=512 gzip ...) ... (restore from image) ... (gunzip ... dd of=/dev/ad3 seek=39000000 count=1000000 bs=512 ...) (gunzip ... dd of=/dev/ad3 seek=40000000 count=1000000 bs=512 ...) (gunzip ... dd of=/dev/ad3 seek=41000000 count=1000000 bs=512 ...) Shutdown FreeBSD, Boot to DOS Z:\ss\DISKCOMP.EXE 20 Cadfael 80 F5 81 F7 /new_log /comment JRL Z:\ss\DISKHASH.EXE 20 Cadfael 80 /comment F5(JRL) /new_log /after
Log files loc:	test-archive/dd/freebsd-4.4/20
Log File Highlights:	dd_image ad1 ad3 20 (backup to image) dk-backup /dev/ad1 20 Fri Jan 10 20:53:43 EST 2003 (dd if=/dev/ad1 skip=0 count=1000000 bs=512 gzip ...) 1000000+0 records in 1000000+0 records out 512000000 bytes transferred in 143.896231 secs (3558120 bytes/sec) (dd if=/dev/ad1 skip=1000000 count=1000000 bs=512 gzip ...) 1000000+0 records in 1000000+0 records out 512000000 bytes transferred in 119.230509 secs (4294203 bytes/sec) ...

	<pre>(restore from image) ... 512000000 bytes transferred in 145.712128 secs (3513778 bytes/sec ...) (gunzip ... dd of=/dev/ad3 seek=40000000 count=1000000 bs=512 ...) 188960+0 records in 188960+0 records out 96747520 bytes transferred in 27.524741 secs (3514929 bytes/sec ...) (gunzip ... dd of=/dev/ad3 seek=41000000 count=1000000 bs=512 ...) 0+0 records in 0+0 records out 0 bytes transferred in 0.000017 secs (0 bytes/sec ...) Finish at Fri Jan 10 23:52:10 EST 2003 === Error messages === no message = = = = Measurement Logs = = = = Sectors Compared 40188960 Sectors Differ 0 Diffs range Hash after test: 83A0002816BBF089F8BE33C41C92C3B5A0F42A54</pre>
Expected Results:	Source disk is unchanged src compares equal to dst
Actual Results:	No anomalies
Analysis:	Expected results achieved

Case DI(Linux)-21 for FreeBSD 4.4 dd	
Case Summary:	Create an image from a LINUX IDE source disk to a LINUX IDE destination disk where the source disk is larger than the destination
Tester Name:	SN
Test Date:	Mon Jan 13 21:44:41 2003
PC:	McCloud
Disks:	<pre>Source: DOS Drive 80 Physical Label F5 Destination: DOS Drive 81 Physical Label A8 Image media: DOS Drive 80 Physical Label 7A F5 is an IBM-DTLA-307020 with 40188960 sectors A8 is a WDC WD200BB-00AUA1 with 39102336 sectors 7A is a MAXTOR 6L040J2 with 78177792 sectors Windows 98 [Version 4.10.2222] DOS boot floppy with run scripts CD-ROM with PartitionMagic Pro 6.0 and FS-TST Release 1.0</pre>
Source disk setup:	<pre>Dual boot Linux/Windows Me with EXT2 & Fat16 Disk: F5 Host: Cadfael Operator: JRL OS: WindowsMe/Linux Date: Sat Aug 11 11:13:43 2001 DISKWIPE.EXE F5_SRC Cadfael 80 F5 /src X:\pm\pqmagic /cmd=X:\pm\fat-src.txt Load Operating System to Source disk DISKHASH.EXE F5_SRC Cadfael 80 /before Disk hash = 83A0002816BBF089F8BE33C41C92C3B5A0F42A54</pre>
Destination Setup:	Z:\ss\DISKWIPE.EXE 21 McCloud 81 A8 /noask /dst /new_log /comment SN
Execute:	<pre>Boot to DOS Z:\ss\DISKWIPE.EXE 21 McCloud 81 A8 /noask /dst /new_log /comment SN Boot to FreeBSD dd_image ad1 ad3 21 (backup to image) (dd if=/dev/ad1 skip=0 count=1000000 bs=512 gzip ...) (dd if=/dev/ad1 skip=1000000 count=1000000 bs=512 gzip ...) (dd if=/dev/ad1 skip=2000000 count=1000000 bs=512 gzip ...) ... (restore from image) ... (gunzip ... dd of=/dev/ad3 seek=39000000 count=1000000 bs=512 ...) (gunzip ... dd of=/dev/ad3 seek=40000000 count=1000000 bs=512 ...) (gunzip ... dd of=/dev/ad3 seek=41000000 count=1000000 bs=512 ...) Shutdown FreeBSD, Boot to DOS Z:\ss\DISKCOMP.EXE 21 McCloud 80 F5 81 A8 /new_log /comment SN Z:\ss\DISKHASH.EXE 21 McCloud 80 /comment F5(SN) /new_log /after</pre>
Log files loc:	test-archive/dd/freebsd-4.4/21

Log File Highlights:	<pre>dd_image ad1 ad3 21 (backup to image) dk-backup /dev/ad1 21 Mon Jan 13 22:16:12 EST 2003 (dd if=/dev/ad1 skip=0 count=1000000 bs=512 gzip ...) 1000000+0 records in 1000000+0 records out 512000000 bytes transferred in 145.526005 secs (3518272 bytes/sec) (dd if=/dev/ad1 skip=1000000 count=1000000 bs=512 gzip ...) 1000000+0 records in 1000000+0 records out 512000000 bytes transferred in 118.978436 secs (4303301 bytes/sec) ... (restore from image) ... (gunzip ... dd of=/dev/ad3 seek=40000000 count=1000000 bs=512 ...) dd: /dev/ad3: Invalid argument 1+0 records in 0+0 records out 0 bytes transferred in 0.019907 secs (0 bytes/sec ...) (gunzip ... dd of=/dev/ad3 seek=41000000 count=1000000 bs=512 ...) 0+0 records in 0+0 records out 0 bytes transferred in 0.012119 secs (0 bytes/sec ...) Finish at Tue Jan 14 01:01:25 EST 2003 === Error messages === dd: /dev/ad3: end of device = = = Measurement Logs = = = Sectors Compared 39102336 Sectors Differ 0 Diffs range Source (40188960) has 1086624 more sectors than destination (39102336) Hash after test: 83A0002816BBF089F8BE33C41C92C3B5A0F42A54</pre>
Expected Results:	Source disk is unchanged src compares qualified equal to dst, src is truncated on dst truncation is logged
Actual Results:	No anomalies
Analysis:	Expected results achieved

Case DI(Linux)-23 for FreeBSD 4.4 dd	
Case Summary:	Create an image from a LINUX IDE source disk to a LINUX IDE destination disk and the source contains a LINUX partition where the source disk is smaller than the destination
Tester Name:	JRL
Test Date:	Thu Nov 07 13:41:24 2002
PC:	HecRamsey
Disks:	Source: DOS Drive 80 Physical Label F5 Destination: DOS Drive 81 Physical Label F7 Image media: DOS Drive 80 Physical Label 71 F5 is an IBM-DTLA-307020 with 40188960 sectors F7 is an IBM-DTLA-307020 with 40188960 sectors 71 is a IC35L040AVER07-0 with 80418240 sectors Windows 98 [Version 4.10.2222] DOS boot floppy with run scripts CD-ROM with PartitionMagic Pro 6.0 and FS-TST Release 1.0
Source disk setup:	Dual boot Linux/Windows Me with EXT2 & Fat16 Disk: F5 Host: Cadfael Operator: JRL OS: WindowsMe/Linux Date: Sat Aug 11 11:13:43 2001 DISKWIPE.EXE F5_SRC Cadfael 80 F5 /src X:\pm\pqmagic /cmd=X:\pm\fat-src.txt Load Operating System to Source disk DISKHASH.EXE F5_SRC Cadfael 80 /before Disk hash = 83A0002816BBF089F8BE33C41C92C3B5A0F42A54
Destination Setup:	Z:\ss\DISKWIPE.EXE 23 HecRamsey 81 F7 /noask /dst /new_log /comment JRL
Execute:	Boot to DOS Z:\ss\DISKWIPE.EXE 23 HecRamsey 81 F7 /noask /dst /new_log /comment JRL

	<pre> A:\SECHASH.EXE 23 HecRamsey 81 /new_log /log prehash.txt /first 7389900 /last 7598744 Boot to FreeBSD dd_image adls3 ad3s2 23 (backup to image) (dd if=/dev/adls3 skip=0 count=1000000 bs=512 gzip ...) (dd if=/dev/adls3 skip=1000000 count=1000000 bs=512 gzip ...) (dd if=/dev/adls3 skip=2000000 count=1000000 bs=512 gzip ...) ... (restore from image) ... (gunzip ... dd of=/dev/ad3s2 seek=5000000 count=1000000 bs=512 ...) (gunzip ... dd of=/dev/ad3s2 seek=6000000 count=1000000 bs=512 ...) (gunzip ... dd of=/dev/ad3s2 seek=7000000 count=1000000 bs=512 ...) A:\SECHASH.EXE 23 HecRamsey 81 /new_log /log posthash.txt /first 7389900 /last 7598744 Shutdown FreeBSD, Boot to DOS Z:\ss\PARTCMP.EXE 23 HecRamsey 80 F5 81 F7 /new_log /comment JRL /select 9 2 Z:\ss\DISKHASH.EXE 23 Wimsey 80 /comment F5(JRL) /new_log /after </pre>
Log files loc:	test-archive/dd/freebsd-4.4/23
Log File Highlights:	<pre> Source disk Drive 0x80, BIOS: Extensions Present Interrupt 13 bios 1022/254/63 (max cyl/hd values) Interrupt 13 ext 16383/016/63 (number of cyl/hd) 40188960 total number of sectors reported via interrupt 13 from the BIOS N Start LBA Length Start C/H/S End C/H/S boot Partition type 1 P 000000063 001236942 0000/001/01 0076/254/63 Boot 06 Fat16 2 X 002249100 007181055 0140/000/01 0586/254/63 05 extended 3 S 000000063 000208782 0140/001/01 0152/254/63 83 Linux 4 x 000208845 000144585 0153/000/01 0161/254/63 05 extended 5 S 000000063 000144522 0153/001/01 0161/254/63 06 Fat16 6 x 004450005 000192780 0417/000/01 0428/254/63 05 extended 7 S 000000063 000192717 0417/001/01 0428/254/63 16 other 8 S 000000000 000000000 0000/000/00 0000/000/00 00 empty entry 9 P 009430155 006152895 0587/000/01 0969/254/63 83 Linux 10 P 039760875 000417690 1023/000/01 1023/254/63 82 Linux swap Destination disk Drive 0x81, BIOS: Extensions Present Interrupt 13 bios 1022/254/63 (max cyl/hd values) Interrupt 13 ext 16383/016/63 (number of cyl/hd) 40188960 total number of sectors reported via interrupt 13 from the BIOS N Start LBA Length Start C/H/S End C/H/S boot Partition type 1 P 000000063 001236942 0000/001/01 0076/254/63 06 Fat16 2 P 001237005 006361740 0077/000/01 0472/254/63 83 Linux 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 dd_image adls3 ad3s2 23 (backup to image) dk-backup /dev/adls3 23 Thu Nov 7 15:50:08 EST 2002 (dd if=/dev/adls3 skip=0 count=1000000 bs=512 gzip ...) 1000000+0 records in 1000000+0 records out 512000000 bytes transferred in 140.640783 secs (3640480 bytes/sec) (dd if=/dev/adls3 skip=1000000 count=1000000 bs=512 gzip ...) 1000000+0 records in 1000000+0 records out 512000000 bytes transferred in 129.676448 secs (3948288 bytes/sec) ... (restore from image) ... 512000000 bytes transferred in 147.864715 secs (3462625 bytes/sec ...) (gunzip ... dd of=/dev/ad3s2 seek=6000000 count=1000000 bs=512 ...) 152895+0 records in 152895+0 records out 78282240 bytes transferred in 22.470647 secs (3483756 bytes/sec ...) (gunzip ... dd of=/dev/ad3s2 seek=7000000 count=1000000 bs=512 ...) 0+0 records in 0+0 records out 0 bytes transferred in 0.000016 secs (0 bytes/sec ...) Finish at Thu Nov 7 16:18:43 EST 2002 === Error messages === no message </pre>

	<pre> = = = Measurement Logs = = = Sectors Compared 6152895 Sectors Differ 0 Diffs range: Source (6152895) has 208845 fewer sectors than destination (6361740) Zero fill: 6694 Src Byte fill (F5): 0 Dst Byte fill (F7): 201773 Other fill: 14 Other no fill: 364 Excess Sectors Hashes: Before dd 85D571DAC5834ED608724FACFC5865AA5512663F After dd 85D571DAC5834ED608724FACFC5865AA5512663F Hash after test: 83A0002816BBF089F8BE33C41C92C3B5A0F42A54 </pre>
Expected Results:	Source disk is unchanged src compares qualified equal to dst
Actual Results:	No anomalies
Analysis:	Expected results achieved

Case DI(Linux)-27 for FreeBSD 4.4 dd	
Case Summary:	Create an image from a LINUX IDE source disk to a LINUX IDE destination disk and the source contains a FAT32 partition where the source disk is the same size as the destination
Tester Name:	JRL
Test Date:	Tue Oct 22 17:42:42 2002
PC:	HecRamsey
Disks:	<pre> Source: DOS Drive 80 Physical Label A5 Destination: DOS Drive 81 Physical Label A8 Image media: DOS Drive 80 Physical Label 93 A5 is a WDC WD200BB-00AUA1 with 39102336 sectors A8 is a WDC WD200BB-00AUA1 with 39102336 sectors 93 is a WDC WD300BB-00CAA0 with 58633344 sectors Windows 98 [Version 4.10.2222] DOS boot floppy with run scripts CD-ROM with PartitionMagic Pro 6.0 and FS-TST Release 1.0 </pre>
Source disk setup:	<pre> Fat32 only Disk: A5 Host: JudgeDee Operator: JRL OS: NoOs Options: none Date: Mon Apr 15 14:35:04 2002 cmd: Z:\ss\DISKWIPE.EXE A5 JudgeDee 80 A5 /src /new_log X:\pm\pqmagic /cmd=X:\pm\f32-src.txt No OS loaded, FAT32 partition only cmd: Z:\ss\DISKHASH.EXE A5 JudgeDee 80 /before /new_log Disk hash = 3DE5C01B5BB337EA3E6CF9BC25EB844F5D00FD14 </pre>
Destination Setup:	Z:\ss\DISKWIPE.EXE 27 HecRamsey 81 A8 /noask /dst /new_log /comment JRL
Execute:	<pre> Boot to DOS Z:\ss\DISKWIPE.EXE 27 HecRamsey 81 A8 /noask /dst /new_log /comment JRL Boot to FreeBSD dd_image ad1s1 ad3s1 27 (backup to image) (dd if=/dev/ad1s1 skip=0 count=1000000 bs=512 gzip ...) (dd if=/dev/ad1s1 skip=1000000 count=1000000 bs=512 gzip ...) (dd if=/dev/ad1s1 skip=2000000 count=1000000 bs=512 gzip ...) ... (restore from image) ... (gunzip ... dd of=/dev/ad3s1 seek=0 count=1000000 bs=512 ...) (gunzip ... dd of=/dev/ad3s1 seek=1000000 count=1000000 bs=512 ...) (gunzip ... dd of=/dev/ad3s1 seek=2000000 count=1000000 bs=512 ...) Shutdown FreeBSD, Boot to DOS Z:\ss\PARTCMP.EXE 27 HecRamsey 80 A5 81 A8 /new_log /comment JRL /select 1 1 Z:\ss\DISKHASH.EXE 27 HecRamsey 80 /comment A5(JRL) /new_log /after </pre>
Log files loc:	test-archive/dd/freebsd-4.4/27
Log File Highlights:	Source disk Drive 0x80, BIOS: Extensions Present Interrupt 13 bios 1022/254/63 (max cyl/hd values)

	<pre> Interrupt 13 ext 16383/016/63 (number of cyl/hd) 39102336 total number of sectors reported via interrupt 13 from the BIOS N Start LBA Length Start C/H/S End C/H/S boot Partition type 1 P 000000063 001236942 0000/001/01 0076/254/63 Boot 0B Fat32 2 X 001429785 037061955 0089/000/01 1023/254/63 0F extended 3 S 000000063 000208782 0089/001/01 0101/254/63 83 Linux 4 x 000208845 000144585 0102/000/01 0110/254/63 05 extended 5 S 000000063 000144522 0102/001/01 0110/254/63 0B Fat32 6 x 000771120 000192780 0137/000/01 0148/254/63 05 extended 7 S 000000063 000192717 0137/001/01 0148/254/63 16 other 8 S 000000000 000000000 0000/000/00 0000/000/00 00 empty entry 9 P 038491740 000064260 1023/000/01 1023/254/63 83 Linux 10 P 038684520 000417690 1023/000/01 1023/254/63 82 Linux swap Destination disk Drive 0x81, BIOS: Extensions Present Interrupt 13 bios 1022/254/63 (max cyl/hd values) Interrupt 13 ext 16383/016/63 (number of cyl/hd) 39102336 total number of sectors reported via interrupt 13 from the BIOS N Start LBA Length Start C/H/S End C/H/S boot Partition type 1 P 000000063 001236942 0000/001/01 0076/254/63 0B Fat32 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 dd_image ad1s1 ad3s1 27 (backup to image) dk-backup /dev/ad1s1 27 Tue Oct 22 18:10:12 EDT 2002 (dd if=/dev/ad1s1 skip=0 count=1000000 bs=512 gzip ...) 1000000+0 records in 1000000+0 records out 512000000 bytes transferred in 122.630822 secs (4175133 bytes/sec) (dd if=/dev/ad1s1 skip=1000000 count=1000000 bs=512 gzip ...) 1000000+0 records in 1000000+0 records out 512000000 bytes transferred in 122.630822 secs (4175133 bytes/sec) ... (restore from image) ... 512000000 bytes transferred in 90.554520 secs (5654052 bytes/sec ...) (gunzip ... dd of=/dev/ad3s1 seek=1000000 count=1000000 bs=512 ...) 236942+0 records in 236942+0 records out 121314304 bytes transferred in 21.066297 secs (5758691 bytes/sec ...) (gunzip ... dd of=/dev/ad3s1 seek=2000000 count=1000000 bs=512 ...) 0+0 records in 0+0 records out 0 bytes transferred in 0.000269 secs (0 bytes/sec ...) Finish at Tue Oct 22 18:14:36 EDT 2002 === Error messages === no message = = = = Measurement Logs = = = = Sectors Compared 1236942 Sectors Differ 0 Diffs range: Hash after test: 3DE5C01B5BB337EA3E6CF9BC25EB844F5D00FD14 </pre>
Expected Results:	Source disk is unchanged src compares equal to dst
Actual Results:	No anomalies
Analysis:	Expected results achieved

Case DI(Linux)-30 for FreeBSD 4.4 dd	
Case Summary:	Create an image from a LINUX IDE source disk to a LINUX IDE destination disk and the source contains a FAT32 partition where the source disk is larger than the destination
Tester Name:	JRL
Test Date:	Wed Oct 23 07:48:08 2002
PC:	HecRamsey
Disks:	Source: DOS Drive 80 Physical Label A5 Destination: DOS Drive 81 Physical Label A8 Image media: DOS Drive 80 Physical Label 93

	<p>A5 is a WDC WD200BB-00AUA1 with 39102336 sectors A8 is a WDC WD200BB-00AUA1 with 39102336 sectors 93 is a WDC WD300BB-00CAA0 with 58633344 sectors Windows 98 [Version 4.10.2222] DOS boot floppy with run scripts CD-ROM with PartitionMagic Pro 6.0 and FS-TST Release 1.0</p>																																																																																																																																																
Source disk setup:	<p>Fat32 only Disk: A5 Host: JudgeDee Operator: JRL OS: NoOs Options: none Date: Mon Apr 15 14:35:04 2002</p> <p>cmd: Z:\ss\DISKWIPE.EXE A5 JudgeDee 80 A5 /src /new_log X:\pm\pqmagic /cmd=X:\pm\f32-src.txt No OS loaded, FAT32 partition only cmd: Z:\ss\DISKHASH.EXE A5 JudgeDee 80 /before /new_log</p> <p>Disk hash = 3DE5C01B5BB337EA3E6CF9BC25EB844F5D00FD14</p>																																																																																																																																																
Destination Setup:	Z:\ss\DISKWIPE.EXE 30 HecRamsey 81 A8 /noask /dst /new_log /comment JRL																																																																																																																																																
Execute:	<p>Boot to DOS Z:\ss\DISKWIPE.EXE 30 HecRamsey 81 A8 /noask /dst /new_log /comment JRL Boot to FreeBSD dd_image ad1s1 ad3s1 30 (backup to image) (dd if=/dev/ad1s1 skip=0 count=1000000 bs=512 gzip ...) (dd if=/dev/ad1s1 skip=1000000 count=1000000 bs=512 gzip ...) (dd if=/dev/ad1s1 skip=2000000 count=1000000 bs=512 gzip ...) ... (restore from image) ... (gunzip ... dd of=/dev/ad3s1 seek=0 count=1000000 bs=512 ...) (gunzip ... dd of=/dev/ad3s1 seek=1000000 count=1000000 bs=512 ...) (gunzip ... dd of=/dev/ad3s1 seek=2000000 count=1000000 bs=512 ...) Shutdown FreeBSD, Boot to DOS Z:\ss\PARTCMP.EXE 30 HecRamsey 80 A5 81 A8 /new_log /comment JRL /select 1 1 Z:\ss\DISKHASH.EXE 30 Rumpole 80 /comment A5(JRL) /new_log /after</p>																																																																																																																																																
Log files loc:	test-archive/dd/freebsd-4.4/30																																																																																																																																																
Log File Highlights:	<p>Source disk Drive 0x80, BIOS: Extensions Present Interrupt 13 bios 1022/254/63 (max cyl/hd values) Interrupt 13 ext 16383/016/63 (number of cyl/hd) 39102336 total number of sectors reported via interrupt 13 from the BIOS</p> <table border="1"> <thead> <tr> <th>N</th> <th>Start</th> <th>LBA</th> <th>Length</th> <th>Start C/H/S</th> <th>End C/H/S</th> <th>boot</th> <th>Partition</th> <th>type</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>P</td> <td>000000063</td> <td>001236942</td> <td>0000/001/01</td> <td>0076/254/63</td> <td>Boot</td> <td>0B</td> <td>Fat32</td> </tr> <tr> <td>2</td> <td>X</td> <td>001429785</td> <td>037061955</td> <td>0089/000/01</td> <td>1023/254/63</td> <td>0F</td> <td>extended</td> <td></td> </tr> <tr> <td>3</td> <td>S</td> <td>000000063</td> <td>000208782</td> <td>0089/001/01</td> <td>0101/254/63</td> <td>83</td> <td>Linux</td> <td></td> </tr> <tr> <td>4</td> <td>x</td> <td>000208845</td> <td>000144585</td> <td>0102/000/01</td> <td>0110/254/63</td> <td>05</td> <td>extended</td> <td></td> </tr> <tr> <td>5</td> <td>S</td> <td>000000063</td> <td>000144522</td> <td>0102/001/01</td> <td>0110/254/63</td> <td>0B</td> <td>Fat32</td> <td></td> </tr> <tr> <td>6</td> <td>x</td> <td>000771120</td> <td>000192780</td> <td>0137/000/01</td> <td>0148/254/63</td> <td>05</td> <td>extended</td> <td></td> </tr> <tr> <td>7</td> <td>S</td> <td>000000063</td> <td>000192717</td> <td>0137/001/01</td> <td>0148/254/63</td> <td>16</td> <td>other</td> <td></td> </tr> <tr> <td>8</td> <td>S</td> <td>000000000</td> <td>000000000</td> <td>0000/000/00</td> <td>0000/000/00</td> <td>00</td> <td>empty</td> <td>entry</td> </tr> <tr> <td>9</td> <td>P</td> <td>038491740</td> <td>000064260</td> <td>1023/000/01</td> <td>1023/254/63</td> <td>83</td> <td>Linux</td> <td></td> </tr> <tr> <td>10</td> <td>P</td> <td>038684520</td> <td>000417690</td> <td>1023/000/01</td> <td>1023/254/63</td> <td>82</td> <td>Linux</td> <td>swap</td> </tr> </tbody> </table> <p>Destination disk Drive 0x81, BIOS: Extensions Present Interrupt 13 bios 1022/254/63 (max cyl/hd values) Interrupt 13 ext 16383/016/63 (number of cyl/hd) 39102336 total number of sectors reported via interrupt 13 from the BIOS</p> <table border="1"> <thead> <tr> <th>N</th> <th>Start</th> <th>LBA</th> <th>Length</th> <th>Start C/H/S</th> <th>End C/H/S</th> <th>boot</th> <th>Partition</th> <th>type</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>P</td> <td>000000063</td> <td>001140552</td> <td>0000/001/01</td> <td>0070/254/63</td> <td>0B</td> <td>Fat32</td> <td></td> </tr> <tr> <td>2</td> <td>P</td> <td>000000000</td> <td>000000000</td> <td>0000/000/00</td> <td>0000/000/00</td> <td>00</td> <td>empty</td> <td>entry</td> </tr> <tr> <td>3</td> <td>P</td> <td>000000000</td> <td>000000000</td> <td>0000/000/00</td> <td>0000/000/00</td> <td>00</td> <td>empty</td> <td>entry</td> </tr> <tr> <td>4</td> <td>P</td> <td>000000000</td> <td>000000000</td> <td>0000/000/00</td> <td>0000/000/00</td> <td>00</td> <td>empty</td> <td>entry</td> </tr> </tbody> </table> <p>dd_image ad1s1 ad3s1 30 (backup to image) dk-backup /dev/ad1s1 30 Wed Oct 23 08:31:54 EDT 2002 (dd if=/dev/ad1s1 skip=0 count=1000000 bs=512 gzip ...) 1000000+0 records in 1000000+0 records out 512000000 bytes transferred in 122.628273 secs (4175220 bytes/sec)</p>	N	Start	LBA	Length	Start C/H/S	End C/H/S	boot	Partition	type	1	P	000000063	001236942	0000/001/01	0076/254/63	Boot	0B	Fat32	2	X	001429785	037061955	0089/000/01	1023/254/63	0F	extended		3	S	000000063	000208782	0089/001/01	0101/254/63	83	Linux		4	x	000208845	000144585	0102/000/01	0110/254/63	05	extended		5	S	000000063	000144522	0102/001/01	0110/254/63	0B	Fat32		6	x	000771120	000192780	0137/000/01	0148/254/63	05	extended		7	S	000000063	000192717	0137/001/01	0148/254/63	16	other		8	S	000000000	000000000	0000/000/00	0000/000/00	00	empty	entry	9	P	038491740	000064260	1023/000/01	1023/254/63	83	Linux		10	P	038684520	000417690	1023/000/01	1023/254/63	82	Linux	swap	N	Start	LBA	Length	Start C/H/S	End C/H/S	boot	Partition	type	1	P	000000063	001140552	0000/001/01	0070/254/63	0B	Fat32		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
N	Start	LBA	Length	Start C/H/S	End C/H/S	boot	Partition	type																																																																																																																																									
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5	S	000000063	000144522	0102/001/01	0110/254/63	0B	Fat32																																																																																																																																										
6	x	000771120	000192780	0137/000/01	0148/254/63	05	extended																																																																																																																																										
7	S	000000063	000192717	0137/001/01	0148/254/63	16	other																																																																																																																																										
8	S	000000000	000000000	0000/000/00	0000/000/00	00	empty	entry																																																																																																																																									
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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																																																																																																																																									

	<pre>(dd if=/dev/ad1s1 skip=1000000 count=1000000 bs=512 gzip ...) 236942+0 records in 236942+0 records out 121314304 bytes transferred in 29.108829 secs (4167612 bytes/sec) ... (restore from image) ... (gunzip ... dd of=/dev/ad3s1 seek=1000000 count=1000000 bs=512 ...) dd: /dev/ad3s1: end of device 140553+0 records in 140552+0 records out 71962624 bytes transferred in 12.312489 secs (5844685 bytes/sec ...) (gunzip ... dd of=/dev/ad3s1 seek=2000000 count=1000000 bs=512 ...) 0+0 records in 0+0 records out 0 bytes transferred in 0.000263 secs (0 bytes/sec ...) Finish at Wed Oct 23 08:36:07 EDT 2002 === Error messages === dd: /dev/ad3s1: end of device = = = Measurement Logs = = = Sectors Compared 1140552 Sectors Differ 0 Diffs range: Source (1236942) has 96390 more sectors than destination (1140552) Hash after test: 3DE5C01B5BB337EA3E6CF9BC25EB844F5D00FD14</pre>
Expected Results:	Source disk is unchanged src compares qualified equal to dst, src is truncated on dst truncation is logged
Actual Results:	No anomalies
Analysis:	Expected results achieved

Case DI(Linux)-33 for FreeBSD 4.4 dd	
Case Summary:	Create an image from a LINUX SCSI source disk to a LINUX SCSI destination disk where the source disk is smaller than the destination
Tester Name:	JRL
Test Date:	Thu Jan 09 14:54:52 2003
PC:	Wimsey
Disks:	Source: DOS Drive 80 Physical Label E4 Destination: DOS Drive 81 Physical Label E6 Image media: DOS Drive 80 Physical Label 7A E4 is a QUANTUM ATLAS10K2-TY092J with 17938985 sectors E6 is a SEAGATE ST318404LC with 35843670 sectors 7A is a MAXTOR 6L040J2 with 78177792 sectors Windows 98 [Version 4.10.2222] DOS boot floppy with run scripts CD-ROM with PartitionMagic Pro 6.0 and FS-TST Release 1.0
Source disk setup:	Windows 2000 with NTFS & Fat32 Disk: E4 Host: JudgeDee Operator: JRL OS: Windows 2000/NT Date: Sat Jul 21 16:58:28 2001 DISKWIPE.EXE E4_SRC JudgeDee 80 E4 /src /noask /comment Windows 2000 source disk X:\pm\pqmagic /cmd=X:\pm\nt-src.txt Load Operating System to Source disk cmd: X:\ss\DISKHASH.EXE Hash Wimsey 80 /comment E4 /new_log /before Disk hash = 25BF8AF6B2D3E0BD1909C96E368DB27F51C49CBF
Destination Setup:	Z:\ss\DISKWIPE.EXE 33 Wimsey 81 E6 /noask /dst /new_log /comment JRL
Execute:	Boot to DOS Z:\ss\DISKWIPE.EXE 33 Wimsey 81 E6 /noask /dst /new_log /comment JRL Boot to FreeBSD dd_image da0 da1 33 (backup to image) (dd if=/dev/da0 skip=0 count=1000000 bs=512 gzip ...) (dd if=/dev/da0 skip=1000000 count=1000000 bs=512 gzip ...) (dd if=/dev/da0 skip=2000000 count=1000000 bs=512 gzip ...) ... (restore from image)

	<pre> ... (gunzip ... dd of=/dev/dal seek=16000000 count=1000000 bs=512 ...) (gunzip ... dd of=/dev/dal seek=17000000 count=1000000 bs=512 ...) (gunzip ... dd of=/dev/dal seek=18000000 count=1000000 bs=512 ...) Shutdown FreeBSD, Boot to DOS Z:\ss\DISKCOMP.EXE 33 Wimsey 80 E4 81 E6 /new_log /comment JRL Z:\ss\DISKHASH.EXE 33 Wimsey 80 /comment E4(JRL) /new_log /after </pre>
Log files loc:	test-archive/dd/freebsd-4.4/33
Log File Highlights:	<pre> dd_image da0 dal 33 (backup to image) dk-backup /dev/da0 33 Thu Jan 9 15:28:41 EST 2003 (dd if=/dev/da0 skip=0 count=1000000 bs=512 gzip ...) 1000000+0 records in 1000000+0 records out 512000000 bytes transferred in 121.275246 secs (4221801 bytes/sec) (dd if=/dev/da0 skip=1000000 count=1000000 bs=512 gzip ...) 1000000+0 records in 1000000+0 records out 512000000 bytes transferred in 113.978902 secs (4492059 bytes/sec) ... (restore from image) ... 512000000 bytes transferred in 73.528287 secs (6963307 bytes/sec ...) (gunzip ... dd of=/dev/dal seek=17000000 count=1000000 bs=512 ...) 938985+0 records in 938985+0 records out 480760320 bytes transferred in 68.889754 secs (6978691 bytes/sec ...) (gunzip ... dd of=/dev/dal seek=18000000 count=1000000 bs=512 ...) 0+0 records in 0+0 records out 0 bytes transferred in 0.000019 secs (0 bytes/sec ...) Finish at Thu Jan 9 16:16:03 EST 2003 === Error messages === no message = = = Measurement Logs = = = Sectors Compared 17938985 Sectors Differ 0 Diffs range Source (17938985) has 17904685 fewer sectors than destination (35843670) Zero fill: 0 Src Byte fill (E4): 0 Dst Byte fill (E6): 17904685 Other fill: 0 Other no fill: 0 Hash after test: 25BF8AF6B2D3E0BD1909C96E368DB27F51C49CBF </pre>
Expected Results:	Source disk is unchanged src compares qualified equal to dst
Actual Results:	No anomalies
Analysis:	Expected results achieved

Case DI(Linux)-35 for FreeBSD 4.4 dd	
Case Summary:	Create an image from a LINUX SCSI source disk to a LINUX SCSI destination disk where the source disk is the same size as the destination
Tester Name:	JRL
Test Date:	Tue Oct 22 16:11:35 2002
PC:	Rumpole
Disks:	Source: DOS Drive 80 Physical Label E4 Destination: DOS Drive 81 Physical Label E2 Image media: DOS Drive 80 Physical Label 71 E4 is a QUANTUM ATLAS10K2-TY092J with 17938985 sectors E2 is a QUANTUM ATLAS10K2-TY092J with 17938985 sectors 71 is a IC35L040AVER07-0 with 80418240 sectors Windows 98 [Version 4.10.2222] DOS boot floppy with run scripts CD-ROM with PartitionMagic Pro 6.0 and FS-TST Release 1.0
Source disk setup:	Windows 2000 with NTFS & Fat32 Disk: E4 Host: JudgeDee Operator: JRL OS: Windows 2000/NT

	<pre>Date: Sat Jul 21 16:58:28 2001 DISKWIPE.EXE E4_SRC JudgeDee 80 E4 /src /noask /comment Windows 2000 source disk X:\pm\pqmagic /cmd=X:\pm\nt-src.txt Load Operating System to Source disk cmd: X:\ss\DISKHASH.EXE Hash Wimsey 80 /comment E4 /new_log /before Disk hash = 25BF8AF6B2D3E0BD1909C96E368DB27F51C49CBF</pre>
Destination Setup:	Z:\ss\DISKWIPE.EXE 35 Rumpole 81 E2 /noask /dst /new_log /comment JRL
Execute:	<pre>Boot to DOS Z:\ss\DISKWIPE.EXE 35 Rumpole 81 E2 /noask /dst /new_log /comment JRL Boot to FreeBSD dd_image da0 da1 35 (backup to image) (dd if=/dev/da0 skip=0 count=1000000 bs=512 gzip ...) (dd if=/dev/da0 skip=1000000 count=1000000 bs=512 gzip ...) (dd if=/dev/da0 skip=2000000 count=1000000 bs=512 gzip ...) ... (restore from image) ... (gunzip ... dd of=/dev/da1 seek=16000000 count=1000000 bs=512 ...) (gunzip ... dd of=/dev/da1 seek=17000000 count=1000000 bs=512 ...) (gunzip ... dd of=/dev/da1 seek=18000000 count=1000000 bs=512 ...) Shutdown FreeBSD, Boot to DOS Z:\ss\DISKCOMP.EXE 35 Rumpole 80 E4 81 E2 /new_log /comment JRL Z:\ss\DISKHASH.EXE 35 Rumpole 80 /comment E4(JRL) /new_log /after</pre>
Log files loc:	test-archive/dd/freebsd-4.4/35
Log File Highlights:	<pre>dd_image da0 da1 35 (backup to image) dk-backup /dev/da0 35 Tue Oct 22 16:24:06 EDT 2002 (dd if=/dev/da0 skip=0 count=1000000 bs=512 gzip ...) 1000000+0 records in 1000000+0 records out 512000000 bytes transferred in 114.223701 secs (4482432 bytes/sec) (dd if=/dev/da0 skip=1000000 count=1000000 bs=512 gzip ...) 1000000+0 records in 1000000+0 records out 512000000 bytes transferred in 114.223701 secs (4482432 bytes/sec) ... (restore from image) ... 512000000 bytes transferred in 239.104456 secs (2141324 bytes/sec ...) (gunzip ... dd of=/dev/da1 seek=17000000 count=1000000 bs=512 ...) 938985+0 records in 938985+0 records out 480760320 bytes transferred in 225.571918 secs (2131295 bytes/sec ...) (gunzip ... dd of=/dev/da1 seek=18000000 count=1000000 bs=512 ...) 0+0 records in 0+0 records out 0 bytes transferred in 0.000018 secs (0 bytes/sec ...) Finish at Tue Oct 22 17:58:14 EDT 2002 === Error messages === no message = = = Measurement Logs = = = Sectors Compared 17938985 Sectors Differ 0 Diffs range Hash after test: 25BF8AF6B2D3E0BD1909C96E368DB27F51C49CBF</pre>
Expected Results:	Source disk is unchanged src compares equal to dst
Actual Results:	No anomalies
Analysis:	Expected results achieved

Case DI(Linux)-36 for FreeBSD 4.4 dd	
Case Summary:	Create an image from a LINUX SCSI source disk to a LINUX SCSI destination disk where the source disk is larger than the destination
Tester Name:	SN
Test Date:	Mon Oct 28 14:35:07 2002

PC:	Wimsey
Disks:	Source: DOS Drive 80 Physical Label E3 Destination: DOS Drive 81 Physical Label EB Image media: DOS Drive 80 Physical Label 7A E3 is a QUANTUM ATLAS10K2-TY092J with 17938985 sectors EB is a SEAGATE ST39204LC with 17921835 sectors 7A is a MAXTOR 6L040J2 with 78177792 sectors Windows 98 [Version 4.10.2222] DOS boot floppy with run scripts CD-ROM with PartitionMagic Pro 6.0 and FS-TST Release 1.0
Source disk setup:	Dual boot Linux/Windows Me with EXT2 & Fat16 Disk: E3 Host: Cadfael Operator: JRL OS: Linux Red Hat 7.1/Windows Me Date: Sat Jul 21 16:17:29 2001 DISKWIPE.EXE E3_SRC Rumpole 80 E3 /src /new_log X:\pm\pqmagic /cmd=X:\pm\fat-src.txt Load Operating System to Source disk DISKHASH.EXE E3_SRC Rumpole 80 /before Disk hash = 0F9DACDA6C63D197C048782003D324108CEC7AB0
Destination Setup:	Z:\ss\DISKWIPE.EXE 36 Wimsey 81 EB /noask /dst /new_log /comment SN
Execute:	Boot to DOS Z:\ss\DISKWIPE.EXE 36 Wimsey 81 EB /noask /dst /new_log /comment SN Boot to FreeBSD dd_image da0 da1 36 (backup to image) (dd if=/dev/da0 skip=0 count=1000000 bs=512 gzip ...) (dd if=/dev/da0 skip=1000000 count=1000000 bs=512 gzip ...) (dd if=/dev/da0 skip=2000000 count=1000000 bs=512 gzip ...) ... (restore from image) ... (gunzip ... dd of=/dev/dal seek=16000000 count=1000000 bs=512 ...) (gunzip ... dd of=/dev/dal seek=17000000 count=1000000 bs=512 ...) (gunzip ... dd of=/dev/dal seek=18000000 count=1000000 bs=512 ...) Shutdown FreeBSD, Boot to DOS Z:\ss\DISKCOMP.EXE 36 Wimsey 80 E3 81 EB /new_log /comment SN Z:\ss\DISKHASH.EXE 36 Wimsey 80 /comment E3(SN) /new_log /after
Log files loc:	test-archive/dd/freebsd-4.4/36
Log File Highlights:	dd_image da0 da1 36 (backup to image) dk-backup /dev/da0 36 Mon Oct 28 14:58:01 EST 2002 (dd if=/dev/da0 skip=0 count=1000000 bs=512 gzip ...) 1000000+0 records in 1000000+0 records out 512000000 bytes transferred in 166.159637 secs (3081374 bytes/sec) (dd if=/dev/da0 skip=1000000 count=1000000 bs=512 gzip ...) 1000000+0 records in 1000000+0 records out 512000000 bytes transferred in 77.709048 secs (6588679 bytes/sec) ... (restore from image) ... (gunzip ... dd of=/dev/dal seek=17000000 count=1000000 bs=512 ...) dd: /dev/dal: end of device 921836+0 records in 921835+0 records out 471979520 bytes transferred in 68.117466 secs (6928906 bytes/sec ...) (gunzip ... dd of=/dev/dal seek=18000000 count=1000000 bs=512 ...) 0+0 records in 0+0 records out 0 bytes transferred in 0.000025 secs (0 bytes/sec ...) Finish at Mon Oct 28 15:48:04 EST 2002 === Error messages === dd: /dev/dal: end of device = = = Measurement Logs = = = Sectors Compared 17921835 Sectors Differ 0 Diffs range Source (17938985) has 17150 more sectors than destination (17921835)

	Hash after test: 0F9DACDA6C63D197C048782003D324108CEC7AB0
Expected Results:	Source disk is unchanged src compares qualified equal to dst, src is truncated on dst truncation is logged
Actual Results:	No anomalies
Analysis:	Expected results achieved

Case DI(Linux)-38 for FreeBSD 4.4 dd	
Case Summary:	Create an image from a LINUX SCSI source disk to a LINUX SCSI destination disk and the source contains a NTFS partition where the source disk is smaller than the destination
Tester Name:	JRL
Test Date:	Sat Nov 09 14:59:17 2002
PC:	Cadfael
Disks:	Source: DOS Drive 80 Physical Label 31 Destination: DOS Drive 81 Physical Label 34 Image media: DOS Drive 80 Physical Label 7A 31 is a FUJITSU MAG3091L SUN9.0G with 17689266 sectors 34 is a FUJITSU MAG3091L SUN9.0G with 17689266 sectors 7A is a MAXTOR 6L040J2 with 78177792 sectors Windows 98 [Version 4.10.2222] DOS boot floppy with run scripts CD-ROM with PartitionMagic Pro 6.0 and FS-TST Release 1.0
Source disk setup:	NTFS only Disk: 31 Host: Cadfael Operator: JRL OS: NT_No_os Options: none Date: Thu Nov 07 12:05:40 2002 cmd: Z:\ss\DISKWIPE.EXE 31 Cadfael 80 31 /src /new_log X:\pm\pqmagic /cmd=X:\pm\nt-src.txt No OS loaded, NTFS partition only cmd: Z:\ss\DISKHASH.EXE 31 Cadfael 80 /before /new_log Disk hash = 595739865F30C86E3CE5BA03BF1895E008721B8D
Destination Setup:	Z:\ss\DISKWIPE.EXE 38 Cadfael 81 34 /noask /dst /new_log /comment JRL
Execute:	Boot to DOS Z:\ss\DISKWIPE.EXE 38 Cadfael 81 34 /noask /dst /new_log /comment JRL A:\SECHASH.EXE 38 Cadfael 81 /first 1237005 /last 1333394 /log prehash.txt Boot to FreeBSD dd_image da0s1 dals1 38 (backup to image) (dd if=/dev/da0s1 skip=0 count=1000000 bs=512 gzip ...) (dd if=/dev/da0s1 skip=1000000 count=1000000 bs=512 gzip ...) (dd if=/dev/da0s1 skip=2000000 count=1000000 bs=512 gzip ...) ... (restore from image) ... (gunzip ... dd of=/dev/dals1 seek=0 count=1000000 bs=512 ...) (gunzip ... dd of=/dev/dals1 seek=1000000 count=1000000 bs=512 ...) (gunzip ... dd of=/dev/dals1 seek=2000000 count=1000000 bs=512 ...) A:\SECHASH.EXE 38 Cadfael 81 /first 1237005 /last 1333394 /log posthash.txt Shutdown FreeBSD, Boot to DOS Z:\ss\PARTCMP.EXE 38 Cadfael 80 31 81 34 /new_log /comment JRL /select 1 1 Z:\ss\DISKHASH.EXE 38 Cadfael 80 /comment 31(JRL) /new_log /after
Log files loc:	test-archive/dd/freebsd-4.4/38
Log File Highlights:	Source disk Drive 0x80, BIOS: Extensions Present Interrupt 13 bios 1022/254/63 (max cyl/hd values) Interrupt 13 ext 01023/255/63 (number of cyl/hd) 17689267 total number of sectors reported via interrupt 13 from the BIOS N Start LBA Length Start C/H/S End C/H/S boot Partition type 1 P 000000063 001236942 0000/001/01 0076/254/63 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

	<pre> Destination disk Drive 0x81, BIOS: Extensions Present Interrupt 13 bios 1022/254/63 (max cyl/hd values) Interrupt 13 ext 01023/255/63 (number of cyl/hd) 17689267 total number of sectors reported via interrupt 13 from the BIOS N Start LBA Length Start C/H/S End C/H/S boot Partition type 1 P 000000063 001333332 0000/001/01 0082/254/63 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 dd_image da0s1 dals1 38 (backup to image) dk-backup /dev/da0s1 38 Sat Nov 9 16:01:02 EST 2002 (dd if=/dev/da0s1 skip=0 count=1000000 bs=512 gzip ...) 1000000+0 records in 1000000+0 records out 512000000 bytes transferred in 72.971234 secs (7016464 bytes/sec) (dd if=/dev/da0s1 skip=1000000 count=1000000 bs=512 gzip ...) 236942+0 records in 236942+0 records out 121314304 bytes transferred in 17.381283 secs (6979594 bytes/sec) ... (restore from image) ... 512000000 bytes transferred in 6262.947796 secs (81751 bytes/sec ...) (gunzip ... dd of=/dev/dals1 seek=1000000 count=1000000 bs=512 ...) 236942+0 records in 236942+0 records out 121314304 bytes transferred in 1421.955202 secs (85315 bytes/sec ...) (gunzip ... dd of=/dev/dals1 seek=2000000 count=1000000 bs=512 ...) 0+0 records in 0+0 records out 0 bytes transferred in 0.000019 secs (0 bytes/sec ...) Finish at Sat Nov 9 18:10:37 EST 2002 === Error messages === no message = = = Measurement Logs = = = Sectors Compared 1236942 Sectors Differ 0 Diffs range: Source (1236942) has 96390 fewer sectors than destination (1333332) Zero fill: 0 Src Byte fill (31): 0 Dst Byte fill (34): 96389 Other fill: 0 Other no fill: 1 Excess Sectors Hashes: Before dd 31C2BD77EE38AC8395F8CC11FB0D337B4A213B04 After dd 31C2BD77EE38AC8395F8CC11FB0D337B4A213B04 Hash after test: 595739865F30C86E3CE5BA03BF1895E008721B8D </pre>
Expected Results:	Source disk is unchanged src compares qualified equal to dst
Actual Results:	No anomalies
Analysis:	Expected results achieved

Case DI(Linux)-42 for FreeBSD 4.4 dd	
Case Summary:	Create an image from a LINUX SCSI source disk to a LINUX SCSI destination disk and the source contains a LINUX partition where the source disk is the same size as the destination
Tester Name:	JRL
Test Date:	Sat Nov 09 10:11:07 2002
PC:	HecRamsey
Disks:	Source: DOS Drive 80 Physical Label E3 Destination: DOS Drive 81 Physical Label E2 Image media: DOS Drive 80 Physical Label 71 E3 is a QUANTUM ATLAS10K2-TY092J with 17938985 sectors E2 is a QUANTUM ATLAS10K2-TY092J with 17938985 sectors 71 is a IC35L040AVER07-0 with 80418240 sectors Windows 98 [Version 4.10.2222] DOS boot floppy with run scripts CD-ROM with PartitionMagic Pro 6.0 and FS-TST Release 1.0

Source disk setup:	<pre>Dual boot Linux/Windows Me with EXT2 & Fat16 Disk: E3 Host: Cadfael Operator: JRL OS: Linux Red Hat 7.1/Windows Me Date: Sat Jul 21 16:17:29 2001 DISKWIPE.EXE E3_SRC Rumpole 80 E3 /src /new_log X:\pm\pqmagic /cmd=X:\pm\fat-src.txt Load Operating System to Source disk DISKHASH.EXE E3_SRC Rumpole 80 /before Disk hash = 0F9DACDA6C63D197C048782003D324108CEC7AB0</pre>
Destination Setup:	<pre>Z:\ss\DISKWIPE.EXE 42 HecRamsey 81 E2 /noask /dst /new_log /comment JRL</pre>
Execute:	<pre>Boot to DOS Z:\ss\DISKWIPE.EXE 42 HecRamsey 81 E2 /noask /dst /new_log /comment JRL Boot to FreeBSD dd_image da0s3 dals2 42 (backup to image) (dd if=/dev/da0s3 skip=0 count=1000000 bs=512 gzip ...) (dd if=/dev/da0s3 skip=1000000 count=1000000 bs=512 gzip ...) (dd if=/dev/da0s3 skip=2000000 count=1000000 bs=512 gzip ...) ... (restore from image) ... (gunzip ... dd of=/dev/dals2 seek=5000000 count=1000000 bs=512 ...) (gunzip ... dd of=/dev/dals2 seek=6000000 count=1000000 bs=512 ...) (gunzip ... dd of=/dev/dals2 seek=7000000 count=1000000 bs=512 ...) Shutdown FreeBSD, Boot to DOS Z:\ss\PARTCMP.EXE 42 Wimsey 80 E3 81 E2 /new_log /comment JRL /select 9 2 Z:\ss\DISKHASH.EXE 42 Wimsey 80 /comment E3(JRL) /new_log /after</pre>
Log files loc:	<pre>test-archive/dd/freebsd-4.4/42</pre>
Log File Highlights:	<pre>Source disk Drive 0x80, BIOS: Extensions Present Interrupt 13 bios 1022/254/63 (max cyl/hd values) Interrupt 13 ext 01023/255/63 (number of cyl/hd) 17938985 total number of sectors reported via interrupt 13 from the BIOS N Start LBA Length Start C/H/S End C/H/S boot Partition type 1 P 000000063 001236942 0000/001/01 0076/254/63 Boot 06 Fat16 2 X 002249100 007181055 0140/000/01 0586/254/63 05 extended 3 S 000000063 000208782 0140/001/01 0152/254/63 83 Linux 4 x 000208845 000144585 0153/000/01 0161/254/63 05 extended 5 S 000000063 000144522 0153/001/01 0161/254/63 06 Fat16 6 x 004450005 000192780 0417/000/01 0428/254/63 05 extended 7 S 000000063 000192717 0417/001/01 0428/254/63 16 other 8 S 000000000 000000000 0000/000/00 0000/000/00 00 empty entry 9 P 009430155 006152895 0587/000/01 0969/254/63 83 Linux 10 P 017510850 000417690 1023/000/01 1023/254/63 82 Linux swap Destination disk Drive 0x81, BIOS: Extensions Present Interrupt 13 bios 1022/254/63 (max cyl/hd values) Interrupt 13 ext 01023/255/63 (number of cyl/hd) 17938985 total number of sectors reported via interrupt 13 from the BIOS N Start LBA Length Start C/H/S End C/H/S boot Partition type 1 P 000000063 001236942 0000/001/01 0076/254/63 06 Fat16 2 P 001237005 006152895 0077/000/01 0459/254/63 83 Linux 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 dd_image da0s3 dals2 42 (backup to image) dk-backup /dev/da0s3 42 Sat Nov 9 10:35:14 EST 2002 (dd if=/dev/da0s3 skip=0 count=1000000 bs=512 gzip ...) 1000000+0 records in 1000000+0 records out 512000000 bytes transferred in 102.951913 secs (4973196 bytes/sec) (dd if=/dev/da0s3 skip=1000000 count=1000000 bs=512 gzip ...) 1000000+0 records in 1000000+0 records out 512000000 bytes transferred in 94.126571 secs (5439484 bytes/sec) ... (restore from image)</pre>

	<pre> ... 512000000 bytes transferred in 235.610245 secs (2173080 bytes/sec ...) (gunzip ... dd of=/dev/dals2 seek=6000000 count=1000000 bs=512 ...) 152895+0 records in 152895+0 records out 78282240 bytes transferred in 36.035787 secs (2172347 bytes/sec ...) (gunzip ... dd of=/dev/dals2 seek=7000000 count=1000000 bs=512 ...) 0+0 records in 0+0 records out 0 bytes transferred in 0.018088 secs (0 bytes/sec ...) Finish at Sat Nov 9 15:37:01 EST 2002 === Error messages === no message = = = Measurement Logs = = = Sectors Compared 6152895 Sectors Differ 0 Diffs range: Hash after test: 0F9DACDA6C63D197C048782003D324108CEC7AB0 </pre>
Expected Results:	Source disk is unchanged src compares equal to dst
Actual Results:	No anomalies
Analysis:	Expected results achieved

Case DI(Linux)-45 for FreeBSD 4.4 dd	
Case Summary:	Create an image from a LINUX SCSI source disk to a LINUX SCSI destination disk and the source contains a FAT16 partition where the source disk is larger than the destination
Tester Name:	JRL
Test Date:	Tue Oct 22 07:03:39 2002
PC:	Rumpole
Disks:	<pre> Source: DOS Drive 80 Physical Label E3 Destination: DOS Drive 81 Physical Label EB Image media: DOS Drive 80 Physical Label 71 E3 is a QUANTUM ATLAS10K2-TY092J with 17938985 sectors EB is a SEAGATE ST39204LC with 17921835 sectors 71 is a IC35L040AVER07-0 with 80418240 sectors Windows 98 [Version 4.10.2222] DOS boot floppy with run scripts CD-ROM with PartitionMagic Pro 6.0 and FS-TST Release 1.0 </pre>
Source disk setup:	<pre> Dual boot Linux/Windows Me with EXT2 & Fat16 Disk: E3 Host: Cadfael Operator: JRL OS: Linux Red Hat 7.1/Windows Me Date: Sat Jul 21 16:17:29 2001 DISKWIPE.EXE E3_SRC Rumpole 80 E3 /src /new_log X:\pm\pvmagic /cmd=X:\pm\fat-src.txt Load Operating System to Source disk DISKHASH.EXE E3_SRC Rumpole 80 /before Disk hash = 0F9DACDA6C63D197C048782003D324108CEC7AB0 </pre>
Destination Setup:	Z:\ss\DISKWIPE.EXE 45 Rumpole 81 EB /noask /dst /new_log /comment JRL
Execute:	<pre> Boot to DOS Z:\ss\DISKWIPE.EXE 45 Rumpole 81 EB /noask /dst /new_log /comment JRL Boot to FreeBSD dd_image da0s1 dals1 45 (backup to image) (dd if=/dev/da0s1 skip=0 count=1000000 bs=512 gzip ...) (dd if=/dev/da0s1 skip=1000000 count=1000000 bs=512 gzip ...) (dd if=/dev/da0s1 skip=2000000 count=1000000 bs=512 gzip ...) ... (restore from image) ... (gunzip ... dd of=/dev/dals1 seek=0 count=1000000 bs=512 ...) (gunzip ... dd of=/dev/dals1 seek=1000000 count=1000000 bs=512 ...) (gunzip ... dd of=/dev/dals1 seek=2000000 count=1000000 bs=512 ...) Shutdown FreeBSD, Boot to DOS Z:\ss\PARTCMP.EXE 45 Rumpole 80 E3 81 EB /new_log /comment JRL /select 1 1 Z:\ss\DISKHASH.EXE 45 Rumpole 80 /comment E3(JRL) /new_log /after </pre>

Log files loc:	test-archive/dd/freebsd-4.4/45
Log File Highlights:	<pre> Source disk Drive 0x80, BIOS: Extensions Present Interrupt 13 bios 1022/254/63 (max cyl/hd values) Interrupt 13 ext 01023/255/63 (number of cyl/hd) 17938985 total number of sectors reported via interrupt 13 from the BIOS N Start LBA Length Start C/H/S End C/H/S boot Partition type 1 P 000000063 001236942 0000/001/01 0076/254/63 Boot 06 Fat16 2 X 002249100 007181055 0140/000/01 0586/254/63 05 extended 3 S 000000063 000208782 0140/001/01 0152/254/63 83 Linux 4 x 000208845 000144585 0153/000/01 0161/254/63 05 extended 5 S 000000063 000144522 0153/001/01 0161/254/63 06 Fat16 6 x 004450005 000192780 0417/000/01 0428/254/63 05 extended 7 S 000000063 000192717 0417/001/01 0428/254/63 16 other 8 S 000000000 000000000 0000/000/00 0000/000/00 00 empty entry 9 P 009430155 006152895 0587/000/01 0969/254/63 83 Linux 10 P 017510850 000417690 1023/000/01 1023/254/63 82 Linux swap Destination disk Drive 0x81, BIOS: Extensions Present Interrupt 13 bios 1022/254/63 (max cyl/hd values) Interrupt 13 ext 01023/255/63 (number of cyl/hd) 17921835 total number of sectors reported via interrupt 13 from the BIOS N Start LBA Length Start C/H/S End C/H/S boot Partition type 1 P 000000063 001140552 0000/001/01 0070/254/63 06 Fat16 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 dd_image da0s1 dals1 45 (backup to image) dk-backup /dev/da0s1 45 Tue Oct 22 07:34:14 EDT 2002 (dd if=/dev/da0s1 skip=0 count=1000000 bs=512 gzip ...) 1000000+0 records in 1000000+0 records out 512000000 bytes transferred in 154.814580 secs (3307182 bytes/sec) (dd if=/dev/da0s1 skip=1000000 count=1000000 bs=512 gzip ...) 1000000+0 records in 1000000+0 records out 512000000 bytes transferred in 154.814580 secs (3307182 bytes/sec) ... (restore from image) ... (gunzip ... dd of=/dev/dals1 seek=1000000 count=1000000 bs=512 ...) dd: /dev/dals1: end of device 140553+0 records in 140552+0 records out 71962624 bytes transferred in 9.727593 secs (7397783 bytes/sec ...) (gunzip ... dd of=/dev/dals1 seek=2000000 count=1000000 bs=512 ...) 0+0 records in 0+0 records out 0 bytes transferred in 0.000018 secs (0 bytes/sec ...) Finish at Tue Oct 22 07:38:34 EDT 2002 === Error messages === dd: /dev/dals1: end of device = = = Measurement Logs = = = Sectors Compared 1140552 Sectors Differ 0 Diffs range: Source (1236942) has 96390 more sectors than destination (1140552) Hash after test: 0F9DACDA6C63D197C048782003D324108CEC7AB0 </pre>
Expected Results:	<pre> Source disk is unchanged src compares qualified equal to dst, src is truncated on dst truncation is logged </pre>
Actual Results:	No anomalies
Analysis:	Expected results achieved

Case DI(Linux)-48 for FreeBSD 4.4 dd	
Case Summary:	Create an image from a LINUX IDE source disk to a LINUX SCSI destination disk where the source disk is smaller than the destination
Tester Name:	SN
Test Date:	Fri Oct 25 10:17:34 2002

PC:	HecRamsey
Disks:	Source: DOS Drive 80 Physical Label F6 Destination: DOS Drive 81 Physical Label CC Image media: DOS Drive 80 Physical Label 7A F6 is an IBM-DTLA-307020 with 40188960 sectors CC is a SEAGATE ST336705LC with 71687370 sectors 7A is a MAXTOR 6L040J2 with 78177792 sectors Windows 98 [Version 4.10.2222] DOS boot floppy with run scripts CD-ROM with PartitionMagic Pro 6.0 and FS-TST Release 1.0
Source disk setup:	Windows 2000 with NTFS & Fat32 Disk: F6 Host: Wimsey Operator: JRL OS: Windows 2000 Date: Sat Jul 21 15:53:12 2001 DISKWIPE.EXE F6_SRC Wimsey 80 F6 /src /new_log /noask /comment Windows 2000/NT source X:\pm\pqmagic /cmd=X:\pm\nt-src.txt Load Operating System to Source disk DISKHASH.EXE LX-27 Morse 80 /before Disk hash = 8034683D5D55BA51409AC7B5CB0845CA2CF6B235
Destination Setup:	Z:\ss\DISKWIPE.EXE 48 HecRamsey 81 CC /noask /dst /new_log /comment SN
Execute:	Boot to DOS Z:\ss\DISKWIPE.EXE 48 HecRamsey 81 CC /noask /dst /new_log /comment SN Boot to FreeBSD dd_image ad1 da0 48 (backup to image) (dd if=/dev/ad1 skip=0 count=1000000 bs=512 gzip ...) (dd if=/dev/ad1 skip=1000000 count=1000000 bs=512 gzip ...) (dd if=/dev/ad1 skip=2000000 count=1000000 bs=512 gzip ...) ... (restore from image) ... (gunzip ... dd of=/dev/da0 seek=39000000 count=1000000 bs=512 ...) (gunzip ... dd of=/dev/da0 seek=40000000 count=1000000 bs=512 ...) (gunzip ... dd of=/dev/da0 seek=41000000 count=1000000 bs=512 ...) Shutdown FreeBSD, Boot to DOS Z:\ss\DISKCOMP.EXE 48 HecRamsey 80 F6 81 CC /new_log /comment SN Z:\ss\DISKHASH.EXE 48 HecRamsey 80 /comment F6(SN) /new_log /after
Log files loc:	test-archive/dd/freebsd-4.4/48
Log File Highlights:	dd_image ad1 da0 48 (backup to image) dk-backup /dev/ad1 48 Fri Oct 25 11:03:41 EDT 2002 (dd if=/dev/ad1 skip=0 count=1000000 bs=512 gzip ...) 1000000+0 records in 1000000+0 records out 512000000 bytes transferred in 129.503648 secs (3953557 bytes/sec) (dd if=/dev/ad1 skip=1000000 count=1000000 bs=512 gzip ...) 1000000+0 records in 1000000+0 records out 512000000 bytes transferred in 129.986947 secs (3938857 bytes/sec) ... (restore from image) ... 512000000 bytes transferred in 64.819951 secs (7898803 bytes/sec ...) (gunzip ... dd of=/dev/da0 seek=40000000 count=1000000 bs=512 ...) 188960+0 records in 188960+0 records out 96747520 bytes transferred in 12.257774 secs (7892748 bytes/sec ...) (gunzip ... dd of=/dev/da0 seek=41000000 count=1000000 bs=512 ...) 0+0 records in 0+0 records out 0 bytes transferred in 0.000016 secs (0 bytes/sec ...) Finish at Fri Oct 25 13:06:43 EDT 2002 === Error messages === no message = = = Measurement Logs = = = Sectors Compared 40188960 Sectors Differ 0 Diffs range

	Source (40188960) has 31498410 fewer sectors than destination (71687370) Zero fill: 0 Src Byte fill (F6): 0 Dst Byte fill (CC): 31498410 Other fill: 0 Other no fill: 0 Hash after test: 8034683D5D55BA51409AC7B5CB0845CA2CF6B235
Expected Results:	Source disk is unchanged src compares qualified equal to dst
Actual Results:	No anomalies
Analysis:	Expected results achieved

Case DI(Linux)-49 for FreeBSD 4.4 dd	
Case Summary:	Create an image from a LINUX IDE source disk to a LINUX SCSI destination disk where the source disk is larger than the destination
Tester Name:	SN
Test Date:	Tue Oct 29 17:26:41 2002
PC:	Wimsey
Disks:	Source: DOS Drive 80 Physical Label F6 Destination: DOS Drive 81 Physical Label E2 Image media: DOS Drive 80 Physical Label 71 F6 is an IBM-DTLA-307020 with 40188960 sectors E2 is a QUANTUM ATLAS10K2-TY092J with 17938985 sectors 71 is a IC35L040AVER07-0 with 80418240 sectors Windows 98 [Version 4.10.2222] DOS boot floppy with run scripts CD-ROM with PartitionMagic Pro 6.0 and FS-TST Release 1.0
Source disk setup:	Windows 2000 with NTFS & Fat32 Disk: F6 Host: Wimsey Operator: JRL OS: Windows 2000 Date: Sat Jul 21 15:53:12 2001 DISKWIPE.EXE F6_SRC Wimsey 80 F6 /src /new_log /noask /comment Windows 2000/NT source X:\pm\pqmagic /cmd=X:\pm\nt-src.txt Load Operating System to Source disk DISKHASH.EXE LX-27 Morse 80 /before Disk hash = 8034683D5D55BA51409AC7B5CB0845CA2CF6B235
Destination Setup:	Z:\ss\DISKWIPE.EXE 49 Wimsey 81 E2 /noask /dst /new_log /comment SN
Execute:	Boot to DOS Z:\ss\DISKWIPE.EXE 49 Wimsey 81 E2 /noask /dst /new_log /comment SN Boot to FreeBSD dd_image adl da0 49 (backup to image) (dd if=/dev/adl skip=0 count=1000000 bs=512 gzip ...) (dd if=/dev/adl skip=1000000 count=1000000 bs=512 gzip ...) (dd if=/dev/adl skip=2000000 count=1000000 bs=512 gzip ...) ... (restore from image) ... (gunzip ... dd of=/dev/da0 seek=39000000 count=1000000 bs=512 ...) (gunzip ... dd of=/dev/da0 seek=40000000 count=1000000 bs=512 ...) (gunzip ... dd of=/dev/da0 seek=41000000 count=1000000 bs=512 ...) Shutdown FreeBSD, Boot to DOS Z:\ss\DISKCOMP.EXE 49 Wimsey 80 F6 81 E2 /new_log /comment SN Z:\ss\DISKHASH.EXE 49 Wimsey 80 /comment F6(SN) /new_log /after
Log files loc:	test-archive/dd/freebsd-4.4/49
Log File Highlights:	dd_image adl da0 49 (backup to image) dk-backup /dev/adl 49 Tue Oct 29 17:41:19 EST 2002 (dd if=/dev/adl skip=0 count=1000000 bs=512 gzip ...) 1000000+0 records in 1000000+0 records out 512000000 bytes transferred in 148.369448 secs (3450845 bytes/sec) (dd if=/dev/adl skip=1000000 count=1000000 bs=512 gzip ...) 1000000+0 records in

	<pre> 1000000+0 records out 512000000 bytes transferred in 144.116804 secs (3552674 bytes/sec) ... (restore from image) ... (gunzip ... dd of=/dev/da0 seek=4000000 count=1000000 bs=512 ...) dd: /dev/da0: Invalid argument 1+0 records in 0+0 records out 0 bytes transferred in 0.000156 secs (0 bytes/sec ...) (gunzip ... dd of=/dev/da0 seek=41000000 count=1000000 bs=512 ...) 0+0 records in 0+0 records out 0 bytes transferred in 0.000026 secs (0 bytes/sec ...) Finish at Tue Oct 29 20:11:20 EST 2002 === Error messages === dd: /dev/da0: end of device = = = Measurement Logs = = = Sectors Compared 17938985 Sectors Differ 0 Diffs range Source (40188960) has 22249975 more sectors than destination (17938985) Hash after test: 8034683D5D55BA51409AC7B5CB0845CA2CF6B235 </pre>
Expected Results:	<pre> Source disk is unchanged src compares qualified equal to dst, src is truncated on dst truncation is logged </pre>
Actual Results:	No anomalies
Analysis:	Expected results achieved

Case DI(Linux)-51 for FreeBSD 4.4 dd	
Case Summary:	Create an image from a LINUX SCSI source disk to a LINUX IDE destination disk where the source disk is smaller than the destination
Tester Name:	JRL
Test Date:	Thu Oct 24 09:21:15 2002
PC:	AndWife
Disks:	<pre> Source: DOS Drive 80 Physical Label E4 Destination: DOS Drive 81 Physical Label A7 Image media: DOS Drive 80 Physical Label 93 E4 is a QUANTUM ATLAS10K2-TY092J with 17938985 sectors A7 is a WDC WD200BB-00AUA1 with 39102336 sectors 93 is a WDC WD300BB-00CAA0 with 58633344 sectors Windows 98 [Version 4.10.2222] DOS boot floppy with run scripts CD-ROM with PartitionMagic Pro 6.0 and FS-TST Release 1.0 </pre>
Source disk setup:	<pre> Windows 2000 with NTFS & Fat32 Disk: E4 Host: JudgeDee Operator: JRL OS: Windows 2000/NT Date: Sat Jul 21 16:58:28 2001 DISKWIPE.EXE E4_SRC JudgeDee 80 E4 /src /noask /comment Windows 2000 source disk X:\pm\pqmagic /cmd=X:\pm\nt-src.txt Load Operating System to Source disk cmd: X:\ss\DISKHASH.EXE Hash Wimsey 80 /comment E4 /new_log /before Disk hash = 25BF8AF6B2D3E0BD1909C96E368DB27F51C49CBF </pre>
Destination Setup:	Z:\ss\DISKWIPE.EXE 51 AndWife 81 A7 /noask /dst /new_log /comment JRL
Execute:	<pre> Boot to DOS Z:\ss\DISKWIPE.EXE 51 AndWife 81 A7 /noask /dst /new_log /comment JRL Boot to FreeBSD dd_image da0 ad1 51 (backup to image) (dd if=/dev/da0 skip=0 count=1000000 bs=512 gzip ...) (dd if=/dev/da0 skip=1000000 count=1000000 bs=512 gzip ...) (dd if=/dev/da0 skip=2000000 count=1000000 bs=512 gzip ...) ... (restore from image) ... (gunzip ... dd of=/dev/ad1 seek=16000000 count=1000000 bs=512 ...) </pre>

	(gunzip ... dd of=/dev/ad1 seek=17000000 count=1000000 bs=512 ...) (gunzip ... dd of=/dev/ad1 seek=18000000 count=1000000 bs=512 ...) Shutdown FreeBSD, Boot to DOS Z:\ss\DISKCOMP.EXE 51 Wimsey 81 E4 80 A7 /new_log /comment JRL Z:\ss\DISKHASH.EXE 51 Wimsey 80 /comment E4(JRL) /new_log /after
Log files loc:	test-archive/dd/freebsd-4.4/51
Log File Highlights:	dd_image da0 ad1 51 (backup to image) dk-backup /dev/da0 51 Thu Oct 24 10:04:28 EDT 2002 (dd if=/dev/da0 skip=0 count=1000000 bs=512 gzip ...) 1000000+0 records in 1000000+0 records out 512000000 bytes transferred in 122.032941 secs (4195588 bytes/sec) (dd if=/dev/da0 skip=1000000 count=1000000 bs=512 gzip ...) 1000000+0 records in 1000000+0 records out 512000000 bytes transferred in 114.114231 secs (4486732 bytes/sec) ... (restore from image) ... 512000000 bytes transferred in 88.575582 secs (5780374 bytes/sec ...) (gunzip ... dd of=/dev/ad1 seek=17000000 count=1000000 bs=512 ...) 938985+0 records in 938985+0 records out 480760320 bytes transferred in 86.063116 secs (5586137 bytes/sec ...) (gunzip ... dd of=/dev/ad1 seek=18000000 count=1000000 bs=512 ...) 0+0 records in 0+0 records out 0 bytes transferred in 0.000201 secs (0 bytes/sec ...) Finish at Thu Oct 24 10:58:31 EDT 2002 === Error messages === no message = = = Measurement Logs = = = Sectors Compared 17938985 Sectors Differ 0 Diffs range Source (17938985) has 21163351 fewer sectors than destination (39102336) Zero fill: 0 Src Byte fill (E4): 0 Dst Byte fill (A7): 21163351 Other fill: 0 Other no fill: 0 Hash after test: 25BF8AF6B2D3E0BD1909C96E368DB27F51C49CBF
Expected Results:	Source disk is unchanged src compares qualified equal to dst
Actual Results:	No anomalies
Analysis:	Expected results achieved

Case DI(Linux)-52 for FreeBSD 4.4 dd	
Case Summary:	Create an image from a LINUX SCSI source disk to a LINUX IDE destination disk where the source disk is larger than the destination
Tester Name:	JRL
Test Date:	Fri Nov 01 12:34:12 2002
PC:	Cadfael
Disks:	Source: DOS Drive 80 Physical Label E4 Destination: DOS Drive 81 Physical Label 65 Image media: DOS Drive 80 Physical Label 7A E4 is a QUANTUM ATLAS10K2-TY092J with 17938985 sectors 65 is a WDCWD64AA with 12594960 sectors 7A is a MAXTOR 6L040J2 with 78177792 sectors Windows 98 [Version 4.10.2222] DOS boot floppy with run scripts CD-ROM with PartitionMagic Pro 6.0 and FS-TST Release 1.0
Source disk setup:	Windows 2000 with NTFS & Fat32 Disk: E4 Host: JudgeDee Operator: JRL OS: Windows 2000/NT Date: Sat Jul 21 16:58:28 2001

	<pre>DISKWIPE.EXE E4_SRC JudgeDee 80 E4 /src /noask /comment Windows 2000 source disk X:\pm\pqmagic /cmd=X:\pm\nt-src.txt Load Operating System to Source disk cmd: X:\ss\DISKHASH.EXE Hash Wimsey 80 /comment E4 /new_log /before Disk hash = 25BF8AF6B2D3E0BD1909C96E368DB27F51C49CBF</pre>
Destination Setup:	Z:\ss\DISKWIPE.EXE 52 Cadfael 81 65 /noask /dst /new_log /comment JRL
Execute:	<pre>Boot to DOS Z:\ss\DISKWIPE.EXE 52 Cadfael 81 65 /noask /dst /new_log /comment JRL Boot to FreeBSD dd_image da0 ad1 52 (backup to image) (dd if=/dev/da0 skip=0 count=1000000 bs=512 gzip ...) (dd if=/dev/da0 skip=1000000 count=1000000 bs=512 gzip ...) (dd if=/dev/da0 skip=2000000 count=1000000 bs=512 gzip ...) ... (restore from image) ... (gunzip ... dd of=/dev/ad1 seek=16000000 count=1000000 bs=512 ...) (gunzip ... dd of=/dev/ad1 seek=17000000 count=1000000 bs=512 ...) (gunzip ... dd of=/dev/ad1 seek=18000000 count=1000000 bs=512 ...) Shutdown FreeBSD, Boot to DOS Z:\ss\DISKCOMP.EXE 52 Cadfael 81 E4 80 65 /new_log /comment JRL Z:\ss\DISKHASH.EXE 52 Cadfael 80 /comment E4(JRL) /new_log /after</pre>
Log files loc:	test-archive/dd/freebsd-4.4/52
Log File Highlights:	<pre>dd_image da0 ad1 52 (backup to image) dk-backup /dev/da0 52 Fri Nov 1 13:43:56 EST 2002 (dd if=/dev/da0 skip=0 count=1000000 bs=512 gzip ...) 1000000+0 records in 1000000+0 records out 512000000 bytes transferred in 116.740583 secs (4385793 bytes/sec) (dd if=/dev/da0 skip=1000000 count=1000000 bs=512 gzip ...) 1000000+0 records in 1000000+0 records out 512000000 bytes transferred in 108.969500 secs (4698562 bytes/sec) ... (restore from image) ... (gunzip ... dd of=/dev/ad1 seek=17000000 count=1000000 bs=512 ...) dd: /dev/ad1: Invalid argument 1+0 records in 0+0 records out 0 bytes transferred in 0.000748 secs (0 bytes/sec ...) (gunzip ... dd of=/dev/ad1 seek=18000000 count=1000000 bs=512 ...) 0+0 records in 0+0 records out 0 bytes transferred in 0.000210 secs (0 bytes/sec ...) Finish at Fri Nov 1 20:34:40 EST 2002 === Error messages === dd: /dev/ad1: end of device = = = Measurement Logs = = = Sectors Compared 12594960 Sectors Differ 0 Diffs range Source (17938985) has 5344025 more sectors than destination (12594960) Hash after test: 25BF8AF6B2D3E0BD1909C96E368DB27F51C49CBF</pre>
Expected Results:	Source disk is unchanged src compares qualified equal to dst, src is truncated on dst truncation is logged
Actual Results:	No anomalies
Analysis:	Expected results achieved

About the National Institute of Justice

NIJ is the research, development, and evaluation agency of the U.S. Department of Justice. The Institute provides objective, independent, evidence-based knowledge and tools to enhance the administration of justice and public safety. NIJ's principal authorities are derived from the Omnibus Crime Control and Safe Streets Act of 1968, as amended (see 42 U.S.C. §§ 3721–3723).

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

Strategic Goals

NIJ has seven strategic goals grouped into three categories:

Creating relevant knowledge and tools

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

Dissemination

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

Agency management

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

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

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.

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