Tableau Forensic SAS Bridge T6es-B

Test Results for Hardware Write Block Device - Federated Testing Suite

October 17, 2018
Test Results for Hardware Write Block Device:
Tableau Forensic SAS Bridge T6es-B
Firmware Version Feb 19 2013 16:47:04

Federated Testing Suite for Hardware Write Blocking
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Introduction

The Computer Forensics Tool Testing (CFTT) program is a joint project of the Department of Homeland Security (DHS), the National Institute of Justice (NIJ), and the National Institute of Standards and Technology (NIST) Special Programs Office and Information Technology Laboratory (ITL). CFTT is supported by other organizations, including the Federal Bureau of Investigation, the U.S. Department of Defense Cyber Crime Center, U.S. Internal Revenue Service Criminal Investigation Division Electronic Crimes Program, and the U.S. Department of Homeland Security’s Bureau of Immigration and Customs Enforcement, U.S. Customs and Border Protection and U.S. Secret Service. The objective of the CFTT program is to provide measurable assurance to practitioners, researchers, and other applicable users that the tools used in computer forensics investigations provide accurate results. Accomplishing this requires the development of specifications and test methods for computer forensics tools and subsequent testing of specific tools against those specifications.

Test results provide the information necessary for developers to improve tools, users to make informed choices, and the legal community and others to understand the tools’ capabilities. The CFTT approach to testing computer forensics tools is based on well-recognized methodologies for conformance and quality testing. Interested parties in the computer forensics community can review and comment on the specifications and test methods posted on the CFTT web page.

This document reports the results from testing the hardware write blocking function of the Tableau Forensic SAS Bridge T6es-B device firmware version Feb 19 2013 16:47:04 using the CFTT Federated Testing Test Suite for Hardware Write Blocking, Version 3.1-1.

Federated Testing is an expansion of the CFTT program to provide forensic investigators and labs with test materials for tool testing and to support shared test reports. The goal of Federated Testing is to help forensic investigators to test the tools that they use in their labs and to enable sharing of tool test results. CFTT’s Federated Testing Forensic Tool Testing Environment and included test suites can be downloaded from the CFTT web page and used to test forensic tools. The results can be optionally shared with CFTT, reviewed by CFTT staff, and then shared with the community.

Test results from this and other tools can be found on DHS’s computer forensics web page.
How to Read This Report

This report is organized into the following sections:

1. Tested Device Description. The tool name, version and vendor information are listed.
2. Results Summary. This section identifies any significant anomalies observed in the test runs. This section provides a narrative of key findings identifying where the tool meets expectations and provides a summary of any ways the tool did not meet expectations. The section also provides any observations of interest about the tool or about testing the tool including any observed limitations on tool use.
3. Test Environment. Description of hardware and software used in tool testing.
4. Test Result Details by Case. Automatically generated test results that identify anomalies.
5. Appendix: Additional details. Additional details for each test case.
Test Results for Hardware Write Block Device: Tableau Forensic SAS Bridge T6es-B

1. Device Description

Device Name: Tableau Forensic SAS Bridge T6es-B
Firmware Version: Feb 19 2013 16:47:04

Manufacturer Contact:

- Manufacturer: OpenText Corporation
- Address: 1055 E. Colorado Blvd.
  Pasadena, CA 91106-2375
- Tel: (866) 229-9199
- WWW: https://www.guidancesoftware.com/

2. Results Summary

The tested device functioned as expected with no anomalies.

3. Test Environment

Hardware:
Custom PC with 12 USB 2, 3 eSATA, 2 FireWire 800 and 3 FireWire 400 ports.

Serial Number: 00ecc01 0006114d

4. Test Result Details by Case

This section presents test results grouped by case.

4.1. FT-HWB-SAS
4.1.1. Test Case Description

Test a write blocker’s ability to write-protect a SAS drive. This test can be repeated to test multiple types of connections (interfaces) between a computer and the write blocker. Test the ability of the write blocker to block write commands from the ATA and SCSI command sets issued from a test computer from modifying a SAS drive.
4.1.2. Test Drive Description

Manufacturer, model & size of the test drive used for this test: Fujitsu, MBA3073RC, 75GB

4.1.3. Test Evaluation Criteria

For each computer to blocker connection tested, the number of ‘writes not blocked’ should be 0.

4.1.4. Test Case Results

The following table presents results for the test case.

<table>
<thead>
<tr>
<th>Computer to Blocker Connection</th>
<th>Write Commands Sent</th>
<th>Writes Not Blocked</th>
</tr>
</thead>
<tbody>
<tr>
<td>eSATA</td>
<td>36</td>
<td>0</td>
</tr>
<tr>
<td>FireWire 400</td>
<td>36</td>
<td>0</td>
</tr>
<tr>
<td>FireWire 800</td>
<td>36</td>
<td>0</td>
</tr>
<tr>
<td>USB 2</td>
<td>36</td>
<td>0</td>
</tr>
</tbody>
</table>

4.1.5. Case Summary

Test drive unchanged.
5. Appendix: Additional Details

5.1. FT-HWB-SAS

5.1.1. eSATA

```plaintext
/usr/lib/cgi-bin/test-hwb Tue Jul 10 13:37:57 2018
@(#) test-hwb.c Linux Version 1.4 created 06/27/18 at 10:56:14
compiled Jun 27 2018 10:56:31 with gcc Version 5.4.0 20160609
@(#) wrapper.c Linux Version 1.5 support lib created 08/03/17 at 13:05:44
@(#) ataraw.c Linux Version 1.3 support lib created 08/03/17 at 13:05:44
@(#) ataraw.h Linux Version 1.3 created 08/03/17 at 13:06:12

cmd: /usr/lib/cgi-bin/test-hwb -bh -p /media/cftt/FT-LOGS/FT-HWB-sas/ GP WoFat FT-HWB-sas esata sas /dev/sdc
operator: GP
host: WoFat
test case: FT-HWB-sas
connection type: esata
drive/media type: sas
device: /dev/sdc

<table>
<thead>
<tr>
<th>Opcode</th>
<th>Command Name</th>
<th>Status</th>
<th>Lba/Sector</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>30h</td>
<td>(ATA) WRITE SECTOR(S)</td>
<td>Sent</td>
<td>12288</td>
<td>Unchanged</td>
</tr>
<tr>
<td>CAh</td>
<td>(ATA) WRITE DMA</td>
<td>Sent</td>
<td>51712</td>
<td>Unchanged</td>
</tr>
<tr>
<td>CCh</td>
<td>(ATA) WRITE DMA QUEUED</td>
<td>Sent</td>
<td>52224</td>
<td>Unchanged</td>
</tr>
<tr>
<td>C5h</td>
<td>(ATA) WRITE MULTIPLE</td>
<td>Sent</td>
<td>50432</td>
<td>Unchanged</td>
</tr>
<tr>
<td>31h</td>
<td>(ATA) WRITE SECTOR(S) w/o retries</td>
<td>Sent</td>
<td>12544</td>
<td>Unchanged</td>
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<tr>
<td>CBh</td>
<td>(ATA) WRITE DMA w/o retries</td>
<td>Sent</td>
<td>51968</td>
<td>Unchanged</td>
</tr>
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<td>Unchanged</td>
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<td>39h</td>
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</tr>
<tr>
<td>CEh</td>
<td>(ATA) WRITE MULTIPLE FUA EXT</td>
<td>Sent</td>
<td>52736</td>
<td>Unchanged</td>
</tr>
<tr>
<td>3Bh</td>
<td>(ATA) WRITE STREAM EXT</td>
<td>Sent</td>
<td>15104</td>
<td>Unchanged</td>
</tr>
<tr>
<td>35h</td>
<td>(ATA) WRITE DMA EXT</td>
<td>Sent</td>
<td>13568</td>
<td>Unchanged</td>
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<td>15616</td>
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</tr>
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<td>3Eh</td>
<td>(ATA) WRITE DMA QUEUED FUA EXT</td>
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<td>15872</td>
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<td>3Ah</td>
<td>(ATA) WRITE STREAM DMA EXT</td>
<td>Sent</td>
<td>14848</td>
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<tr>
<td>38h</td>
<td>(ATA) CFA WRITE SECTORS W/O ERASE</td>
<td>Sent</td>
<td>14336</td>
<td>Unchanged</td>
</tr>
<tr>
<td>CDh</td>
<td>(ATA) CFA WRITE MULTIPLE W/O ERASE</td>
<td>Sent</td>
<td>52480</td>
<td>Unchanged</td>
</tr>
<tr>
<td>C0h</td>
<td>(ATA) CFA ERASE SECTORS</td>
<td>Sent</td>
<td>49152</td>
<td>Unchanged</td>
</tr>
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<td>0Ah</td>
<td>(SCSI) WRITE 6</td>
<td>Sent</td>
<td>2576</td>
<td>Unchanged</td>
</tr>
<tr>
<td>2Ah</td>
<td>(SCSI) WRITE 10</td>
<td>Sent</td>
<td>10768</td>
<td>Unchanged</td>
</tr>
<tr>
<td>AAh</td>
<td>(SCSI) WRITE 12</td>
<td>Sent</td>
<td>43536</td>
<td>Unchanged</td>
</tr>
<tr>
<td>8Ah</td>
<td>(SCSI) WRITE 16</td>
<td>Sent</td>
<td>35344</td>
<td>Unchanged</td>
</tr>
<tr>
<td>7Fh</td>
<td>(SCSI) WRITE 32</td>
<td>Sent</td>
<td>32528</td>
<td>Unchanged</td>
</tr>
<tr>
<td>2Eh</td>
<td>(SCSI) WRITE AND VERIFY 10</td>
<td>Sent</td>
<td>11792</td>
<td>Unchanged</td>
</tr>
<tr>
<td>AEh</td>
<td>(SCSI) WRITE AND VERIFY 12</td>
<td>Sent</td>
<td>44560</td>
<td>Unchanged</td>
</tr>
<tr>
<td>8Eh</td>
<td>(SCSI) WRITE AND VERIFY 16</td>
<td>Sent</td>
<td>36368</td>
<td>Unchanged</td>
</tr>
<tr>
<td>7Fh</td>
<td>(SCSI) WRITE AND VERIFY 32</td>
<td>Sent</td>
<td>32529</td>
<td>Unchanged</td>
</tr>
<tr>
<td>41h</td>
<td>(SCSI) WRITE SAME 10</td>
<td>Sent</td>
<td>16656</td>
<td>Unchanged</td>
</tr>
<tr>
<td>93h</td>
<td>(SCSI) WRITE SAME 16</td>
<td>Sent</td>
<td>37648</td>
<td>Unchanged</td>
</tr>
</tbody>
</table>
```
7Fh (SCSI) WRITE SAME 32 Sent 32530 Unchanged
3Fh (SCSI) WRITE LONG 10 Sent 16144 Unchanged
9Fh (SCSI) WRITE LONG 16 Sent 40720 Unchanged
32h (ATA) WRITE LONG Sent 12800 Unchanged
33h (ATA) WRITE LONG w/o retries Sent 13056 Unchanged
45h (ATA) WRITE UNCORRECTABLE EXT Sent 17664 Unchanged

36 writes sent, 0 write(s) not blocked, 0 write commands unsupported.

RESULTS: test drive unchanged

run start Tue Jul 10 13:37:57 2018
run finish Tue Jul 10 13:37:58 2018
elapsed time 0:0:1
Normal exit

Status Key:
Sent - the ioctl used to send this command returned without error and the
ATA error bit (if applicable) was not set.
Not supported - the ioctl used to send this command return with an error
status or the command completed with the ATA error bit set.
Test terminated - the test was terminated for dangerous commands because 3
or more previous commands were not blocked.

Result Key:
Unchanged - no changes to the test drive were detected.
Not Blocked - sending this command resulted in a change to the test drive.
This command was NOT blocked!
n/a - Not applicable.

5.1.2. FireWire 400

/cmd: /usr/lib/cgi-bin/test-hwb -bh -p /media/cftt/FT-LOGS/FT-HWB-sas/ GP
WoFat FT-HWB-sas firewire400 sas /dev/sdc
operator: GP
host: WoFat
test case: FT-HWB-sas
connection type: firewire400
drive/media type: sas
device: /dev/sdc

<table>
<thead>
<tr>
<th>Opcode</th>
<th>Command Name</th>
<th>Status</th>
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<th>Result</th>
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<tbody>
<tr>
<td>30h</td>
<td>(ATA) WRITE SECTOR(S)</td>
<td>Sent</td>
<td>12288</td>
<td>Unchanged</td>
</tr>
<tr>
<td>CAh</td>
<td>(ATA) WRITE DMA</td>
<td>Sent</td>
<td>51712</td>
<td>Unchanged</td>
</tr>
<tr>
<td>CCh</td>
<td>(ATA) WRITE DMA QUEUED</td>
<td>Sent</td>
<td>52224</td>
<td>Unchanged</td>
</tr>
<tr>
<td>C5h</td>
<td>(ATA) WRITE MULTIPLE</td>
<td>Sent</td>
<td>50432</td>
<td>Unchanged</td>
</tr>
<tr>
<td>31h</td>
<td>(ATA) WRITE SECTOR(S) w/o retries</td>
<td>Sent</td>
<td>12544</td>
<td>Unchanged</td>
</tr>
<tr>
<td>CBh</td>
<td>(ATA) WRITE DMA w/o retries</td>
<td>Sent</td>
<td>51968</td>
<td>Unchanged</td>
</tr>
<tr>
<td>3Ch</td>
<td>(ATA) WRITE VERIFY</td>
<td>Sent</td>
<td>15360</td>
<td>Unchanged</td>
</tr>
</tbody>
</table>
34h (ATA) WRITE SECTOR(S) EXT Sent 13312 Unchanged
39h (ATA) WRITE MULTIPLE EXT Sent 14592 Unchanged
CEh (ATA) WRITE MULTIPLE FUA EXT Sent 52736 Unchanged
3Bh (ATA) WRITE STREAM EXT Sent 15104 Unchanged
35h (ATA) WRITE DMA EXT Sent 13568 Unchanged
3Dh (ATA) WRITE DMA FUA EXT Sent 15616 Unchanged
36h (ATA) WRITE DMA QUEUED EXT Sent 13824 Unchanged
3Eh (ATA) WRITE DMA QUEUED FUA EXT Sent 15872 Unchanged
3Ah (ATA) WRITE STREAM DMA EXT Sent 14848 Unchanged
38h (ATA) CFA WRITE SECTORS W/O ERASE Sent 14336 Unchanged
CDh (ATA) CFA WRITE MULTIPLE W/O ERASE Sent 52480 Unchanged
C0h (ATA) CFA ERASE SECTORS Sent 49152 Unchanged
0Ah (SCSI) WRITE 6 Sent 2576 Unchanged
2Ah (SCSI) WRITE 10 Sent 10768 Unchanged
AAh (SCSI) WRITE 12 Sent 43536 Unchanged
8Ah (SCSI) WRITE 16 Sent 35344 Unchanged
7Fh (SCSI) WRITE 32 Sent 32528 Unchanged
2Eh (SCSI) WRITE AND VERIFY 10 Sent 11792 Unchanged
A0h (SCSI) WRITE AND VERIFY 12 Sent 44560 Unchanged
8Eh (SCSI) WRITE AND VERIFY 16 Sent 36368 Unchanged
7Fh (SCSI) WRITE AND VERIFY 32 Sent 32529 Unchanged
41h (SCSI) WRITE SAME 10 Sent 16656 Unchanged
93h (SCSI) WRITE SAME 16 Sent 37648 Unchanged
7Fh (SCSI) WRITE SAME 32 Sent 32530 Unchanged
3Fh (SCSI) WRITE LONG 10 Sent 16144 Unchanged
9Fh (SCSI) WRITE LONG 16 Sent 40720 Unchanged
32h (ATA) WRITE LONG Sent 12800 Unchanged
33h (ATA) WRITE LONG w/o retries Sent 13056 Unchanged
45h (ATA) WRITE UNCORRECTABLE EXT Sent 17664 Unchanged

36 writes sent, 0 write(s) not blocked, 0 write commands unsupported.

RESULTS: test drive unchanged

run start Tue Jul 10 13:29:11 2018
run finish Tue Jul 10 13:31:08 2018
elapsed time 0:1:57
Normal exit

Status Key:
Sent - the ioctl used to send this command returned without error and the
ATA error bit (if applicable) was not set.
Not supported - the ioctl used to send this command return with an error
status or the command completed with the ATA error bit set.
Test terminated - the test was terminated for dangerous commands because 3
or more previous commands were not blocked.

Result Key:
Unchanged - no changes to the test drive were detected.
Not Blocked - sending this command resulted in a change to the test drive.
This command was NOT blocked!
n/a - Not applicable.
5.1.3. FireWire 800

/cmd: /usr/lib/cgi-bin/test-hwb -bh -p /media/cftt/FT-LOGS/FT-HWB-sas/ GP WoFat FT-HWB-sas firewire800 sas /dev/sdc
operator: GP
host: WoFat
test case: FT-HWB-sas
connection type: firewire800
drive/media type: sas
device: /dev/sdc

<table>
<thead>
<tr>
<th>Opcode</th>
<th>Command Name</th>
<th>Status</th>
<th>Lba/Sector</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>30h</td>
<td>(ATA) WRITE SECTOR(S)</td>
<td>Sent</td>
<td>12288</td>
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</tr>
<tr>
<td>CAh</td>
<td>(ATA) WRITE DMA</td>
<td>Sent</td>
<td>51712</td>
<td>Unchanged</td>
</tr>
<tr>
<td>CCh</td>
<td>(ATA) WRITE DMA QUEUED</td>
<td>Sent</td>
<td>52224</td>
<td>Unchanged</td>
</tr>
<tr>
<td>C5h</td>
<td>(ATA) WRITE MULTIPLE</td>
<td>Sent</td>
<td>50432</td>
<td>Unchanged</td>
</tr>
<tr>
<td>31h</td>
<td>(ATA) WRITE SECTOR(S) w/o retries</td>
<td>Sent</td>
<td>12544</td>
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</tr>
<tr>
<td>CBh</td>
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<td>51968</td>
<td>Unchanged</td>
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<tr>
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<td>(ATA) WRITE MULTIPLE EXT</td>
<td>Sent</td>
<td>14592</td>
<td>Unchanged</td>
</tr>
<tr>
<td>CEh</td>
<td>(ATA) WRITE MULTIPLE FUA EXT</td>
<td>Sent</td>
<td>52736</td>
<td>Unchanged</td>
</tr>
<tr>
<td>3Bh</td>
<td>(ATA) WRITE STREAM EXT</td>
<td>Sent</td>
<td>15104</td>
<td>Unchanged</td>
</tr>
<tr>
<td>35h</td>
<td>(ATA) WRITE DMA EXT</td>
<td>Sent</td>
<td>13568</td>
<td>Unchanged</td>
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<tr>
<td>3Dh</td>
<td>(ATA) WRITE DMA FUA EXT</td>
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<td>Unchanged</td>
</tr>
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<td>Unchanged</td>
</tr>
<tr>
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<td>Sent</td>
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<td>Unchanged</td>
</tr>
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<td>Unchanged</td>
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<td>(SCSI) WRITE 6</td>
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<td>Unchanged</td>
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<td>2Ah</td>
<td>(SCSI) WRITE 10</td>
<td>Sent</td>
<td>10768</td>
<td>Unchanged</td>
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<td>Unchanged</td>
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<td>Unchanged</td>
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<td>Sent</td>
<td>40720</td>
<td>Unchanged</td>
</tr>
</tbody>
</table>
### Test Results

<table>
<thead>
<tr>
<th>Opcode</th>
<th>Command Name</th>
<th>Status</th>
<th>Lba/Sector</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>32h</td>
<td>(ATA) WRITE LONG</td>
<td>Sent</td>
<td>12800</td>
<td>Unchanged</td>
</tr>
<tr>
<td>33h</td>
<td>(ATA) WRITE LONG w/o retries</td>
<td>Sent</td>
<td>13056</td>
<td>Unchanged</td>
</tr>
<tr>
<td>45h</td>
<td>(ATA) WRITE UNCORRECTABLE EXT</td>
<td>Sent</td>
<td>17664</td>
<td>Unchanged</td>
</tr>
</tbody>
</table>

36 writes sent, 0 write(s) not blocked, 0 write commands unsupported.

**RESULTS:** test drive unchanged

run start Tue Jul 10 13:39:42 2018
run finish Tue Jul 10 13:41:39 2018
elapsed time 0:1:57
Normal exit

**Status Key:**
- `Sent` - the ioctl used to send this command returned without error and the ATA error bit (if applicable) was not set.
- `Not supported` - the ioctl used to send this command return with an error status or the command completed with the ATA error bit set.
- `Test terminated` - the test was terminated for dangerous commands because 3 or more previous commands were not blocked.

**Result Key:**
- `Unchanged` - no changes to the test drive were detected.
- `Not Blocked` - sending this command resulted in a change to the test drive. This command was NOT blocked!
- `n/a` - Not applicable.

### 5.1.4. USB 2

```bash
/usr/lib/cgi-bin/test-hwb Tue Jul 10 13:39:19 2018
@(#) test-hwb.c Linux Version 1.4 created 06/27/18 at 10:56:14
compiled Jun 27 2018 10:56:31 with gcc Version 5.4.0 20160609
@(#) wrapper.c Linux Version 1.5 support lib created 08/03/17 at 13:05:44
@(#) ataraw.c Linux Version 1.3 support lib created 08/03/17 at 13:05:44
@(#) ataraw.h Linux Version 1.3 created 08/03/17 at 13:06:12
cmd: /usr/lib/cgi-bin/test-hwb -bh -p /media/cftt/FT-LOGS/FT-HWB-sas/ GP WoFat FT-HWB-sas usb2 sas /dev/sdc
operator: GP
host: WoFat
test case: FT-HWB-sas
connection type: usb2
drive/media type: sas
device: /dev/sdc
```

<table>
<thead>
<tr>
<th>Opcode</th>
<th>Command Name</th>
<th>Status</th>
<th>Lba/Sector</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>30h</td>
<td>(ATA) WRITE SECTOR(S)</td>
<td>Sent</td>
<td>12288</td>
<td>Unchanged</td>
</tr>
<tr>
<td>CAh</td>
<td>(ATA) WRITE DMA</td>
<td>Sent</td>
<td>51712</td>
<td>Unchanged</td>
</tr>
<tr>
<td>CCh</td>
<td>(ATA) WRITE DMA QUEUED</td>
<td>Sent</td>
<td>52224</td>
<td>Unchanged</td>
</tr>
<tr>
<td>C5h</td>
<td>(ATA) WRITE MULTIPLE</td>
<td>Sent</td>
<td>50432</td>
<td>Unchanged</td>
</tr>
<tr>
<td>31h</td>
<td>(ATA) WRITE SECTOR(S) w/o retries</td>
<td>Sent</td>
<td>12544</td>
<td>Unchanged</td>
</tr>
<tr>
<td>CBh</td>
<td>(ATA) WRITE DMA w/o retries</td>
<td>Sent</td>
<td>51968</td>
<td>Unchanged</td>
</tr>
<tr>
<td>3Ch</td>
<td>(ATA) WRITE VERIFY</td>
<td>Sent</td>
<td>15360</td>
<td>Unchanged</td>
</tr>
<tr>
<td>34h</td>
<td>(ATA) WRITE SECTOR(S) EXT</td>
<td>Sent</td>
<td>13312</td>
<td>Unchanged</td>
</tr>
<tr>
<td>39h</td>
<td>(ATA) WRITE MULTIPLE EXT</td>
<td>Sent</td>
<td>14592</td>
<td>Unchanged</td>
</tr>
<tr>
<td>C Eh</td>
<td>(ATA) WRITE MULTIPLE FUA EXT</td>
<td>Sent</td>
<td>52736</td>
<td>Unchanged</td>
</tr>
</tbody>
</table>
3Bh  (ATA) WRITE STREAM EXT Sent 15104 Unchanged
35h  (ATA) WRITE DMA EXT Sent 13568 Unchanged
3Dh  (ATA) WRITE DMA FUA EXT Sent 15616 Unchanged
36h  (ATA) WRITE DMA QUEUED EXT Sent 13824 Unchanged
3Eh  (ATA) WRITE DMA QUEUED FUA EXT Sent 15872 Unchanged
3Ah  (ATA) WRITE STREAM DMA EXT Sent 14848 Unchanged
38h  (ATA) CFA WRITE SECTORS W/O ERASE Sent 14336 Unchanged
CDh  (ATA) CFA WRITE MULTIPLE W/O ERASE Sent 52480 Unchanged
C0h  (ATA) CFA ERASE SECTORS Sent 49152 Unchanged
0Ah  (SCSI) WRITE 6 Sent 2576 Unchanged
2Ah  (SCSI) WRITE 10 Sent 10768 Unchanged
AAh  (SCSI) WRITE 12 Sent 43536 Unchanged
8Ah  (SCSI) WRITE 16 Sent 35344 Unchanged
7Fh  (SCSI) WRITE 32 Sent 32528 Unchanged
2Eh  (SCSI) WRITE AND VERIFY 10 Sent 11792 Unchanged
AEh  (SCSI) WRITE AND VERIFY 12 Sent 44560 Unchanged
8Eh  (SCSI) WRITE AND VERIFY 16 Sent 36368 Unchanged
7Fh  (SCSI) WRITE AND VERIFY 32 Sent 32529 Unchanged
41h  (SCSI) WRITE SAME 10 Sent 16656 Unchanged
93h  (SCSI) WRITE SAME 16 Sent 37648 Unchanged
7Fh  (SCSI) WRITE SAME 32 Sent 32530 Unchanged
3Fh  (SCSI) WRITE LONG 10 Sent 16144 Unchanged
9Fh  (SCSI) WRITE LONG 16 Sent 40720 Unchanged
32h  (ATA) WRITE LONG Sent 12800 Unchanged
33h  (ATA) WRITE LONG w/o retries Sent 13056 Unchanged
45h  (ATA) WRITE UNCORRECTABLE EXT Sent 17664 Unchanged

36 writes sent, 0 write(s) not blocked, 0 write commands unsupported.

RESULTS: test drive unchanged

run start Tue Jul 10 13:39:19 2018
run finish Tue Jul 10 13:39:19 2018
elapsed time 0:0:0
Normal exit

Status Key:
Sent - the ioctl used to send this command returned without error and the
ATA error bit (if applicable) was not set.
Not supported - the ioctl used to send this command return with an error
status or the command completed with the ATA error bit set.
Test terminated - the test was terminated for dangerous commands because 3
or more previous commands were not blocked.

Result Key:
Unchanged - no changes to the test drive were detected.
Not Blocked - sending this command resulted in a change to the test drive.
This command was NOT blocked!
n/a - Not applicable.
5.2. Test Setup & Analysis Tool Versions

Version numbers of tools used are listed.

<table>
<thead>
<tr>
<th>Setup &amp; Analysis Tool Versions</th>
</tr>
</thead>
<tbody>
<tr>
<td>test-hwb.c Linux Version 1.4 created 06/27/18 at 10:56:14</td>
</tr>
</tbody>
</table>

Tool: @(#) ft_hwb_prt_test_report.py Version 1.2 created 04/26/18 at 10:11:19
OS: Linux Version 4.13.0-37-generic
Federated Testing Version 3.1-1, released 06/27/2018