UNIVERSITY OF RHODE ISLAND DEPARTMENT OF COMPUTER SCIENCE

Evaluation of Software Write Blocking In SAFE Block Vista V1.0

Technical Report TR10-327

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This report applies the U.S. government's National Institute of Standards (NIST) NIST Software Write Blocker Test Suite V1.2 [1] to SAFE Block Vista V1.0 [2], a software write blocker prototyped at the University of Rhode Island and marketed by ForensicSoft, Inc. The results demonstrate that SAFE Block Vista V1.0 meets all NIST base requirements, and all NIST mandatory and optional test assertions. To facilitate comparison, this report generally follows the format of the NIST report "ACES Software Write Block Tool Test Report: Writeblocker Windows Vista Version 6.10.0" January 2008 [3]. However, this is not a NIST report and should in no way be construed as NIST-conducted tests, or NIST-approved results.

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1. NIST Base Requirements and Our Conclusions

SAFE Block Vista V1.0 shall not allow a protected drive to be changed.
SAFE Block Vista Version 1.0 blocked all test commands from the protected categories that were sent to protected drives, and there were no changes to the protected drives.

SAFE Block Vista V1.0 shall not prevent obtaining any information from or about any drive.
SAFE Block Vista Version 1.0 did not prevent obtaining information from or about any drive.

SAFE Block Vista V1.0 shall not prevent any operations to a drive that is not protected.
SAFE Block Vista Version 1.0 did not alter or block any test commands sent to unprotected drives. Thus, SAFE Block Vista V1.0 meets all base requirements.

2. Deviations from Expectations

This section explains two deviations, or apparent deviations, from expected behavior in our test results. One is a deviation from NIST's specified behavior, which is documented as a design decision in the SAFE Block Vista V1.0 tool. The second explains what at first appears to be a strange MD5 hash result on unprotected disks, but is actually correct.

2.1 Variation from NIST's Expected Behavior

The NIST test specification expects all commands from its "Other" category to be allowed (see test assertion SWB–AO–05 in [3]; which is also summarized in Section 5.2 below). SAFE Block Vista Version 1.0 does this, except that it blocks the WRITE_ATTRIBUTE "Other" command. The SAFE Block Vista Version 1.0 documentation explains that this command could possibly alter the data of a disk so in its default conservative mode, used during the test as specified in Appendix B, SAFE Block Vista Version 1.0 blocks the command. We refer to this as Variation 1 when analyzing test results in Section 8.

2.1a. Same Hash Test Result

In some tests the MD5 hash value before and after a write test to an unprotected disk can be the same, which at first glance is unexpected. This behavior can be found in the NIST report pages 101 and 105 [3].

This is actually correct behavior for these reasons:

- The NIST Software Write Blocker Test Suite V1.2 tests the issuing of write commands with a control structure that specifies zero bytes to write, and does not actually pass the command through. This is sufficient for the NIST Software Write Blocker Test Suite V1.2 because the test suite intercepts write commands to determine if they pass the blocking tool. However, the testing software will not actually ever write any data to the disk.
- In NIST's original report [3], hash values changed on all NTFS disks, but did not change on FAT32 disks (see pages 101 and 105 of [3]). This is due to the fact that NFTS itself writes a log file to its disks, FAT32 does not. Since, as stated above, NIST Software Write Blocker Test Suite V1.2 itself does not write to the disks, the changes in the hashes in the NIST test are a result of the NTFS log being written while the testing software executed.
- We verified that the hash value to unprotected NTFS disks does change using the NIST Software Write Blocker Test Suite V1.2 with SAFE Block Vista V1.0 installed, and does not change for FAT32 disks.

Neither of these seemingly unexpected behaviors are concerns for SAFE Block Vista V1.0's ability to protect and unprotect disks.

3. SAFE Block Description

SAFE Block Vista Version 1.0 consists of a disk drive level device driver with a GUI and system tray application. This is similar to the NTWBPM driver used by WriteBlocker XP that NIST tested in [3], which makes the NIST testing software that tested that NTWBPM driver applicable to SAFE Block Vista Version 1.0 evaluation, for the reasons NIST puts forth in [3].

4. Test Case Selection

The test cases are the 30 tests used in the NIST report [3], most of which are implemented in NIST Software Write Blocker Test Suite V1.2 [1].

5. Test Results by Assertion

This section evaluates SAFE Block Vista V1.0 using the NIST test assertions [3]. The meaning of the test assertions is that described in Section 7 of the NIST report [3].

5.1 NIST Mandatory Assertions

SWB–AM–01 **If a drive is unprotected then SAFE Block Vista V1.0 shall not block any command.**
SAFE Block Vista Version 1.0 did not alter or block any test commands sent to unprotected drives.

SWB–AM–02 **If a drive is protected and a command from the READ category is issued then SAFE Block Vista V1.0 shall not block the command.**
SAFE Block Vista Version 1.0 did not block or alter any test command from the READ category sent to a protected drive.

SWB–AM–03 **If a drive is protected and a command from the WRITE category is issued then SAFE Block Vista V1.0 shall block the command.**
SAFE Block Vista Version 1.0 blocked all of the 34 test commands from the WRITE category issued to protected drives.

SWB–AM–04 **If a drive is protected and a command from the VENDOR_SPECIFIC category is issued then SAFE Block Vista V1.0 shall block the command.**
SAFE Block Vista Version 1.0 blocked all of the 80 test commands from the VENDOR_SPECIFIC category issued to protected drives.

SWB–AM–05 **If a drive is protected and a command from the UNDEFINED category is issued then SAFE Block Vista V1.0 shall block the command.**
SAFE Block Vista Version 1.0 blocked all of the of the 53 test commands from the UNDEFINED category issued to protected drives.

SWB–AM–06 **If a drive is protected and a command from the OTHER category is issued then SAFE Block Vista V1.0 shall not block the command.**
SAFE Block Vista Version 1.0 blocked one test command from the OTHER category sent to a protected drive, as explained in Section 2.1 above.

SWB–AM–07 **If SAFE Block Vista Version 1.0 is executed then SAFE Block Vista V1.0 shall issue a message indicating SAFE Block Vista Version 1.0 is active.**
This is not applicable to the driver, which runs continually from the point of reboot after installation to the point of reboot after de-installation. The GUI application being active is indicated by a tray icon. A pop-up message from the tray indicates when SAFE Block blocks and unblocks devices, including automatic blocking specified as default behavior.

SWB–AM–08 **If SAFE Block Vista V1.0 is executed then SAFE Block Vista V1.0 shall issue a message indicating all drives accessible by the covered interfaces.**
The SAFE Block GUI application displays a tree of all channels and devices accessible by the covered interfaces.

SWB–AM–09 **If SAFE Block Vista V1.0 is executed then SAFE Block Vista V1.0 shall issue a message indicating the protection status of each drive connected to a covered interface.**
The SAFE Block GUI application displays the protection status of all devices connected to covered interfaces.

SWB–AM–10 **If a drive is protected and a command from the BASIC operation category is issued then the command shall fail with an error status and the drive shall not be altered in any way.**

Conclusion: SAFE Block Vista V1.0 meets all NIST mandatory assertions.

5.2 NIST Optional assertions

SWB–AO–01 **If a subset of all covered drives is specified for protection, then commands from the write category shall be blocked for drives in the selected subset.**
SAFE Block Vista Version 1.0 blocked all of the 34 test commands from the WRITE category issued to protected drives.

SWB–AO–02 **If a subset of all drives is specified for protection, then commands from the VENDOR_SPECIFIC category shall be blocked for drives in the selected set.**
SAFE Block Vista Version 1.0 blocked all of the 80 test commands from the VENDOR_SPECIFIC category issued to protected drives.

SWB–AO–03 **If a subset of covered drives is selected for protection, then commands from the UNDEFINED category shall be blocked for drives in the selected set.**
SAFE Block Vista Version 1.0 blocked all of the 53 test commands from the UNDEFINED category sent to protected drives.

SWB–AO–04 **If a subset of covered drives is selected for protection, then commands from the READ category shall be not blocked for drives in the selected set.**
SAFE Block Vista Version 1.0 did not block any test commands from the READ category sent to the drives.

SWB–AO–05 **If a subset of covered drives is selected for protection, then commands from the OTHER category shall be not blocked for drives in the selected set.**
SAFE Block Vista Version 1.0 blocked one of the test commands from the OTHER category sent to the drives, as described in Section 2.1.

SWB–AO–06 **If a subset of covered drives is selected for protection, then no commands from any category shall be blocked for drives not in the selected set.**
SAFE Block Vista Version 1.0 did not block any commands sent to unprotected drives.

SWB–AO–07 **If SAFE Block Vista V1.0 is active and SAFE Block Vista V1.0 is deactivated then no commands to any drive shall be blocked.**
No commands to any drive were blocked after SAFE Block Vista Version 1.0 was de-installed.

SWB–AO–08 **If SAFE Block Vista V1.0 blocks a command then SAFE Block Vista V1.0 shall issue either an audio or visual signal.**
SAFE Block Vista Version 1.0 does not issue its own signal. However, in most instances Windows itself detects the blocking and issues an informational dialog box that the drive is write-protected.

Conclusion: SAFE Block Vista V1.0 meets all NIST optional assertions, with a caveat on SWB-AO-05 (explained in Section 2.1).

6. Testing Environment

All tests were run at the University Of Rhode Island Department Of Computer Science. The test computer consisted of:

Model: Hewlett-Packard Pavilion p6116f

CPU: AMD Athlon X2 (K) 7550 (95W) [Socket 771 LGA; 2.5 GHz; 1066 FSB; 4MB L2 Cache]

RAM: Kingston 8 GB [DDR2 2 GBx4; PC2-6400]

Motherboard: Pegatron M2N78-LA [HP/Compaq Name: Violet-GL8E; NVidia GeForce 9100 Chipset]

4 SATA slots

BIOS: HP Inc. Standard 06/09/09

Hard Drive(s): Seagate Barracuda ST380815AS [7200.10 RPM; 160GB]

Operating System: Microsoft Windows® Vista SP 2

PCI(x1) Card: Startech PEX2IDE 1-Port PATA Adapter

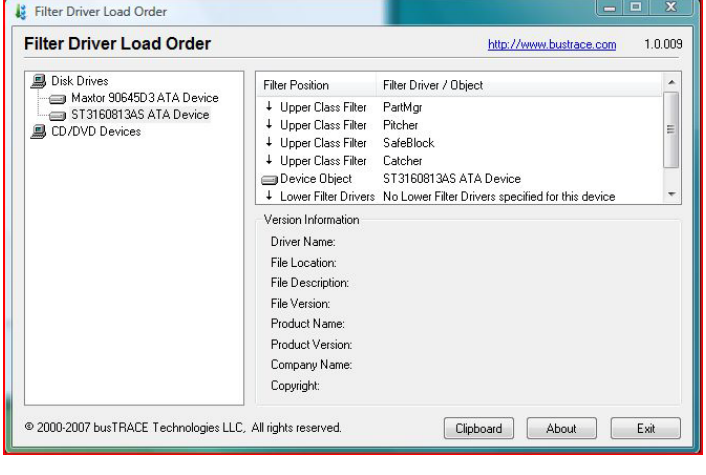
Table 1: Storage Devices Used in Test Computer

Model	Interface	Useable Sectors	Size
Maxtor DiamondMax	PATA	999424	500 MB
Seagate Barracuda	SATA	313524224	160 GB
Promise SmartStor DS4600 External RAID 1	eSATA	313524224	160 GB
PNY Attache Thumb Drive	USB	262144	128 MB

Note that when used “MB” is correct – these are small drives to facilitate fast hashing.

The testing was performed using *NIST Software Write Blocker Test Suite V1.2* [1] installed on the test machine as per installation instructions included in [1] with the modifications described in Appendix C. A screenshot of the busTRACE Filter Driver Load Order v1.0.009 tool [5] showing the NIST filters installed properly can be seen below. Hashes were computed using AccessData FTK Imager 2.7.0 [4].

Figure 1: Driver Order showing NIST test drivers and SAFE Block Vista V1.0



7. Reading Test Results

Each of the test results in the following section show the disk configuration active on the test machine using the Windows Computer Management interface. It is followed by a screen shot of the SAFE Block Vista Version 1.0 interface with the blocked/unblocked disk configuration for the test. The use of a lock icon over the drive icon in the device tree on the left in the SAFE Block Vista Version 1.0 GUI indicates that the drive is protected (blocked), a non-lock icon indicates that the disk is unprotected (not blocked). The test results are shown by summary text displayed by the NIST Software Write Blocker Test Suite V1.2, the general format and meaning of which is fully described in the NIST report [3]. A sample of the full report can be found in Appendix A. The key elements of the display are:

- Line 7 which shows the pattern of blocked disks that the test software expects. In this display:
    - U = Unprotected (unblocked) disk
    - P = Protected (blocked) disk

  For instance:
    - U = only the first disk of the disks described in Section 6 is sent commands and it is expected to be unblocked.
    - PU = the first two disks of the disks described in Section 6 are sent commands and it is expected that disk 1 is protected and disk 2 is unprotected.
    - UUP = the first three disks of the disks described in Section 6 are sent commands and it is expected that disks 1 and 2 are unprotected and disk 3 is protected.
- The summary which shows how many of each type of command got through the SAFE Block Vista Version 1.0 tool.

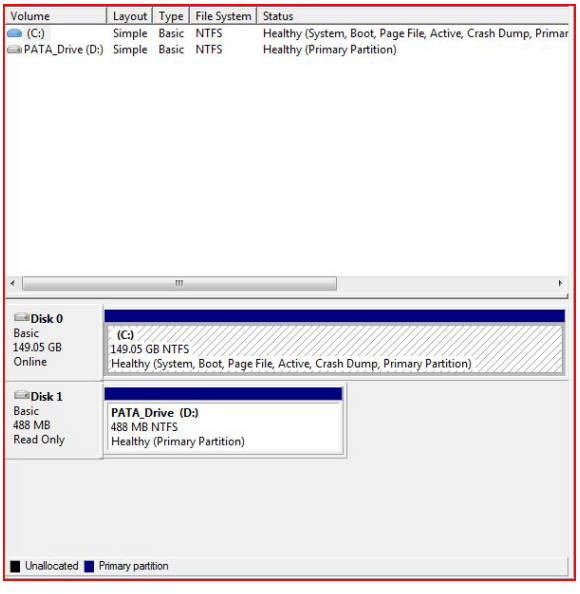
Each test also contains before and after MD5 hash values of all disks involved in the test. The MD5 hash serves as digital signature of the bits on the disk. If the MD5 hash value changes, the disk was written to. If the MD5 hash value remains the same, then it is generally accepted that the disk was not written to. We now provide a subsection for each of the 30 NIST software write blocker tests. Each subsection is patterned after similar subsections in Section 9 of the NIST report.

8. Test Results

8.1 Test Case SWB-01

This test case's primary purpose is to test SAFE Block Vista V1.0's compliance with SWB-AM-01. It issues all possible I/O commands to a single unprotected disk drive.

Figure 2: SWB-01 Drive Configuration



- System Disk
- Unblocked PATA Disk

Figure 3: SWB-01 SAFE Block Vista v1.0 Configuration

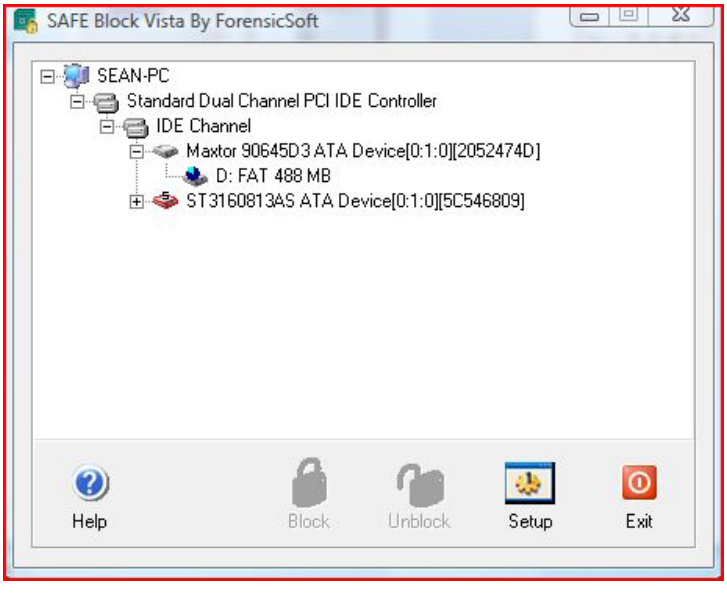


Table 2: SWB-01 MD5 Hash Values

Before PATA Disk	`f7d0870bc664ae76dc407751610f3666`
After PATA Disk	`ae078b3a46f17fe6de0cf2a636a57d65`

Table 3: SWB-01 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE ENABLED


 ****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       8          0        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      34          0       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53
```

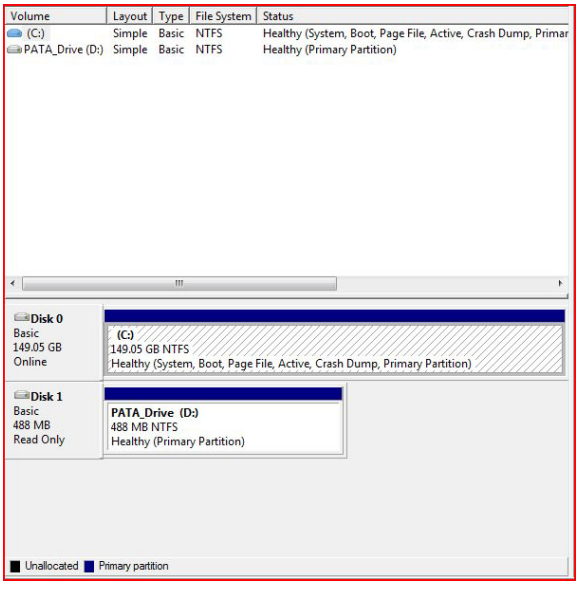
SWB-01 Test result analysis

SAFE Block Vista Version 1.0 performed correctly - all commands were issued and all were allowed on the unblocked disk.

8.2 Test Case SWB-02

This test case tests SAFE Block Vista V1.0's compliance with SWB-AM-02. It issues all possible READ commands to a single protected disk drive. The expected result is that SAFE Block Vista V1.0 will not block any READ command issued by the test application.

Figure 4: SWB-02 Drive Configuration



- System Disk
- Blocked PATA Disk

Figure 5: SWB-02 SAFE Block Vista v1.0 Configuration

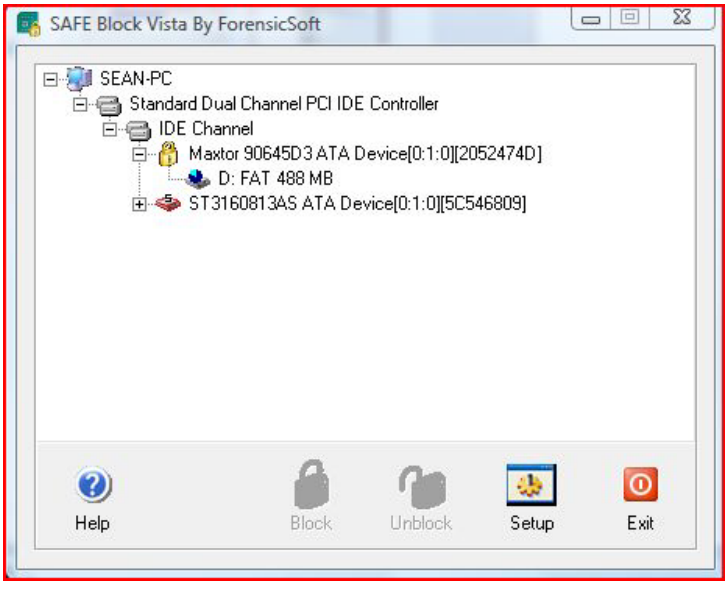


Table 4: SWB-02 MD5 Hash Values

Before PATA Disk	89c345ff0c2efb1db2bf3a78ffdfdd64
After PATA Disk	89c345ff0c2efb1db2bf3a78ffdfdd64

Table 5: SWB-02 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE PROTECTED


 ****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       0          0        0
  Other IRP's ................       0          0        0

  Read CDB's  ................      27          0       27
  Write CDB's ................       0          0        0
  Other CDB's ................       0          0        0
  Vendor SPecific CDB's ......       0          0        0
  Undefined CDB's.............       0          0        0
```

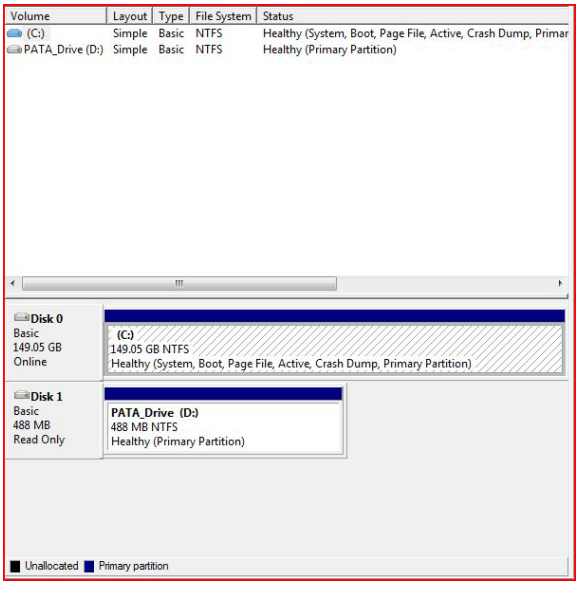
SWB-02 Test result analysis

SAFE Block Vista Version 1.0 performed correctly - only READ commands were issued and all were allowed on the blocked disk.

8.3 Test Case SWB-03

This test case tests SAFE Block Vista V1.0's compliance with SWB-AM-03. It issues all possible commands from the WRITE category to a single protected disk drive. The expected result of this test is that SAFE Block Vista V1.0 will block all commands issued by the test application.

Figure 6: SWB-03 Drive Configuration



- System Disk
- Blocked PATA Disk

Figure 7: SWB-03 SAFE Block Vista v1.0 Configuration

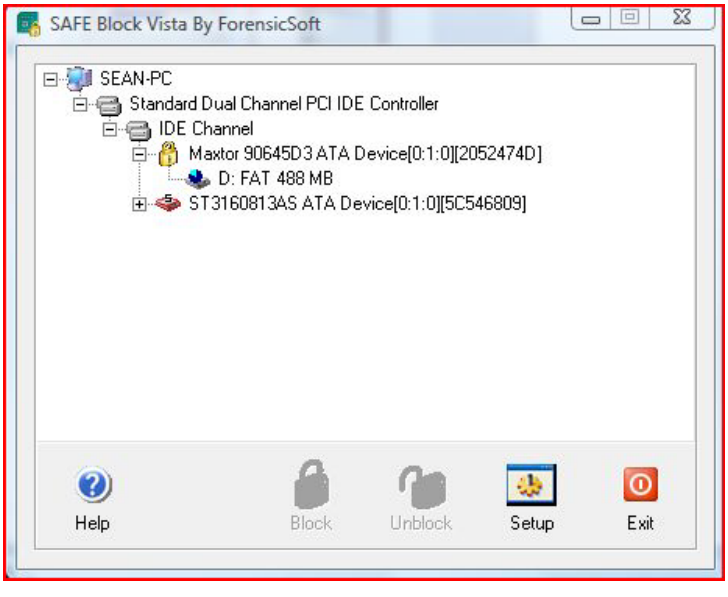


Table 6: SWB-03 MD5 Hash Values

Before PATA Disk	89c345ff0c2efb1db2bf3a78ffdfdd64
After PATA Disk	89c345ff0c2efb1db2bf3a78ffdfdd64

Table 7: SWB-03 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE PROTECTED

 ****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's ..................       0          0        0
  Write IRP's ................        0          8        8
  Other IRP's ................        0          0        0

  Read CDB's  ................        0          0        0
  Write CDB's ................        0         34       34
  Other CDB's ................        0          0        0
  Vendor SPecific CDB's ......        0          0        0
  Undefined CDB's.............        0          0        0
```

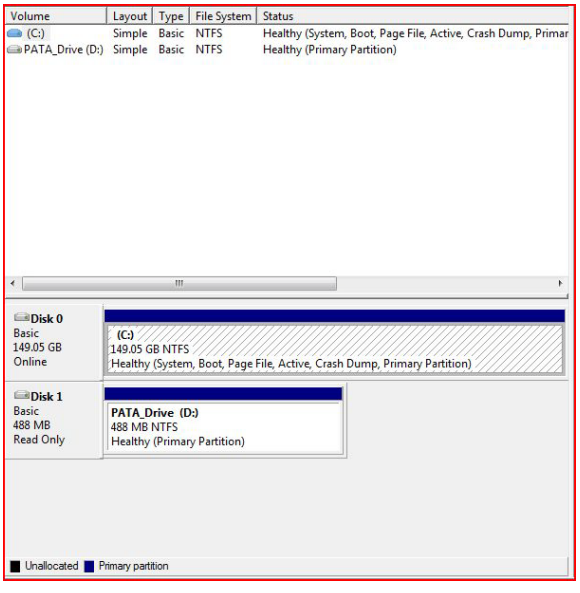
SWB-03 Test result analysis

SAFE Block Vista Version 1.0 performed correctly – only WRITE commands were issued and all were blocked on the blocked disk.

8.4 Test Case SWB-04

This test case tests SAFE Block Vista V1.0's compliance with SWB-AM-04. It issues all possible commands from the VENDOR_SPECIFIC command set to a single protected disk drive. It uses the same hard drive setup as SWB-03. The expected result of this test is that SAFE Block Vista V1.0 will block all commands issued by the test application.

Figure 8: SWB-04 Drive Configuration



- System Disk
- Blocked PATA Disk

Figure 9: SWB-04 SAFE Block Vista v1.0 Configuration

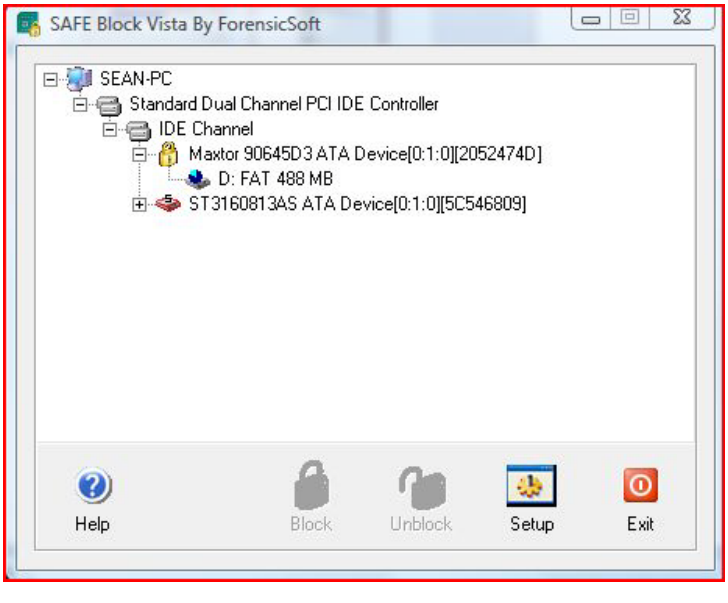


Table 8: SWB-04 MD5 Hash Values

Before PATA Disk	89c345ff0c2efb1db2bf3a78ffdfdd64
After PATA Disk	89c345ff0c2efb1db2bf3a78ffdfdd64

Table 9: SWB-04 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE PROTECTED

 ****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's ..................       0          0        0
  Write IRP's ................        0          0        0
  Other IRP's ................       0          0        0

  Read CDB's  ................       0          0        0
  Write CDB's ................       0          0        0
  Other CDB's ................       0          0        0
  Vendor SPecific CDB's ......       0         80       80
  Undefined CDB's.............       0          0        0
```

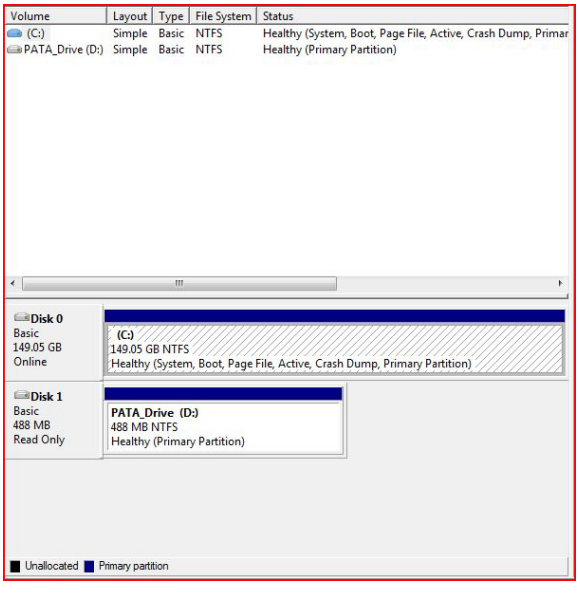
SWB-04 Test result analysis

SAFE Block Vista Version 1.0 performed correctly - only VENDOR SPECIFIC commands were issued and all were blocked on the blocked disk.

8.5 Test Case SWB-05

This test case tests SAFE Block Vista V1.0's compliance with SWB-AM-05. It issues all possible commands from the UNDEFINED command set to a single protected disk drive. It uses the same hard drive setup as SWB-04. The expected result of this test is that SAFE Block Vista V1.0 will block all commands issued by the test application.

Figure 10: SWB-05 Drive Configuration



- System Disk
- Blocked PATA Disk

Figure 11: SWB-05 SAFE Block Vista v1.0 Configuration

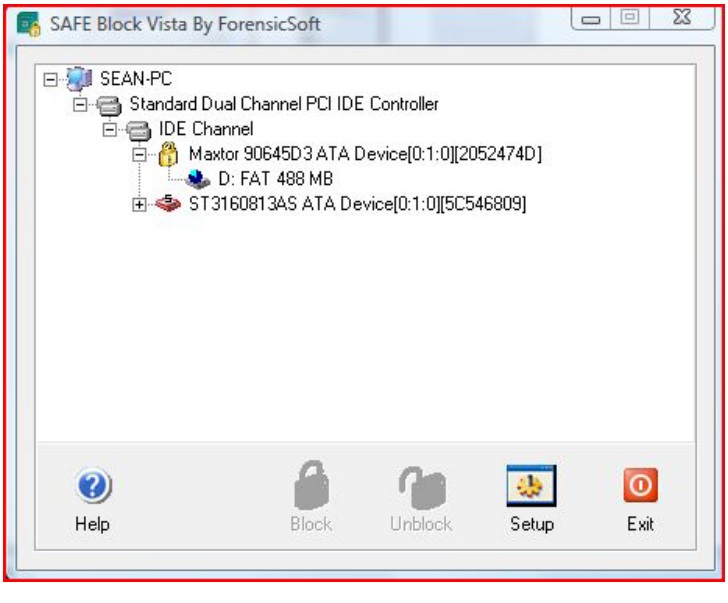


Table 10: SWB-05 MD5 Hash Values

Before PATA Disk	89c345ff0c2efb1db2bf3a78ffdfdd64
After PATA Disk	89c345ff0c2efb1db2bf3a78ffdfdd64

Table 11: SWB-05 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE PROTECTED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's ..................       0          0        0
  Write IRP's ................        0          0        0
  Other IRP's ................       0          0        0

  Read CDB's  ................       0          0        0
  Write CDB's ................       0          0        0
  Other CDB's ................       0          0        0
  Vendor SPecific CDB's ......       0          0        0
  Undefined CDB's.............       0         53       53
```

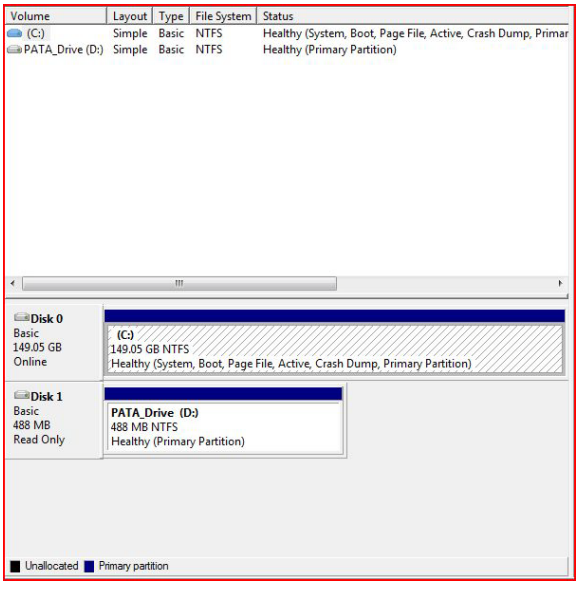
SWB-05 Test result analysis

SAFE Block Vista Version 1.0 performed correctly - only UNDEFINED commands were issued and all were blocked on the blocked disk.

8.6 Test Case SWB-06

This test case tests SAFE Block Vista V1.0's compliance with SWB-AM-06. It issues all possible commands from the OTHER command set to a single protected disk drive. It uses the same hard drive setup as SWB-05. The expected result of this test is that SAFE Block Vista V1.0 will allow all commands issued by the test application.

Figure 12: SWB-06 Drive Configuration



- System Disk
- Blocked PATA Disk

Figure 13: SWB-06 SAFE Block Vista v1.0 Configuration

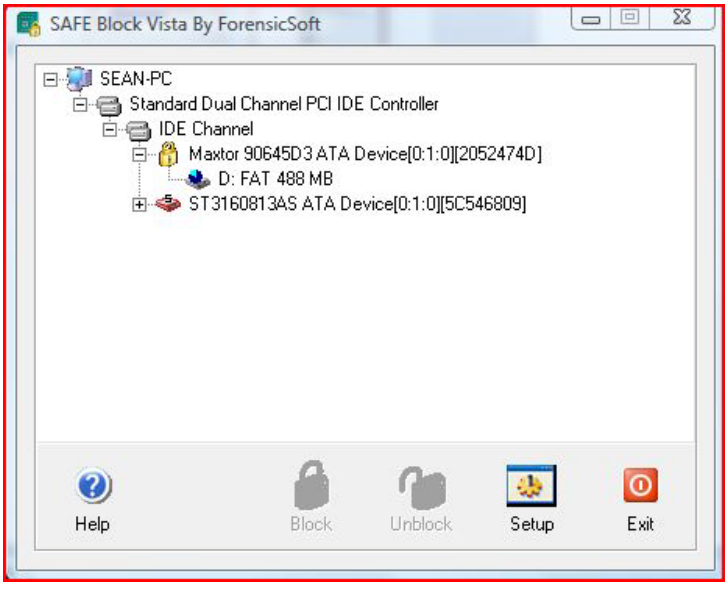


Table 12: SWB-06 MD5 Hash Values

Before PATA Disk	89c345ff0c2efb1db2bf3a78ffdfdd64
After PATA Disk	89c345ff0c2efb1db2bf3a78ffdfdd64

Table 13: SWB-06 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE PROTECTED

 ****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's ..................       0          0        0
  Write IRP's ................        0          0        0
  Other IRP's ................       15          0       15

  Read CDB's  ................       0          0        0
  Write CDB's ................       0          0        0
  Other CDB's ................      61          1       62
  Vendor SPecific CDB's ......       0          0        0
  Undefined CDB's.............       0          0        0
```

SWB-06 Test result analysis

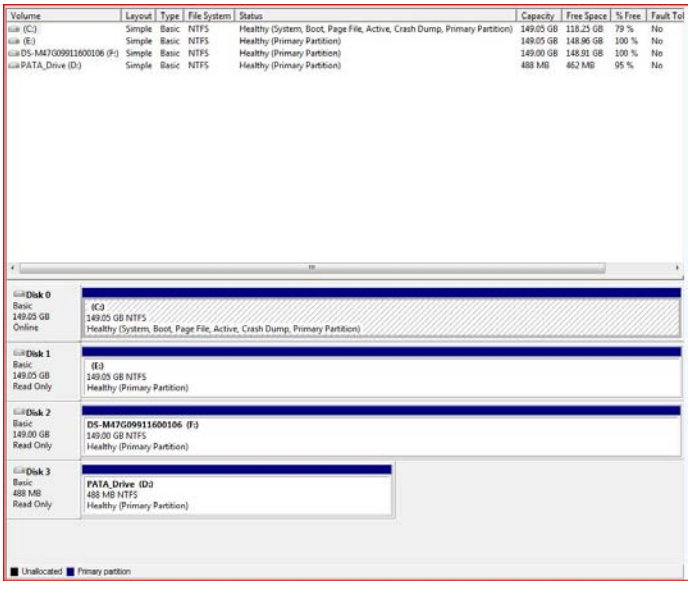
SAFE Block Vista Version 1.0 had one unexpected result in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, SAFE Block Vista V1.0 allowed all OTHER commands issued by the test application.

8.7 Test Case SWB-07

This case tests SAFE Block Vista V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of three drives protected with the pattern PUU. The expected result of this test is SAFE Block Vista V1.0 will:

- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives

Figure 14: SWB-07 Drive Configuration



- System Disk
- Blocked SATA Drive
- Unblocked RAID Array
- Unblocked PATA Disk

Figure 15: SWB-07 SAFE Block Vista v1.0 Configuration

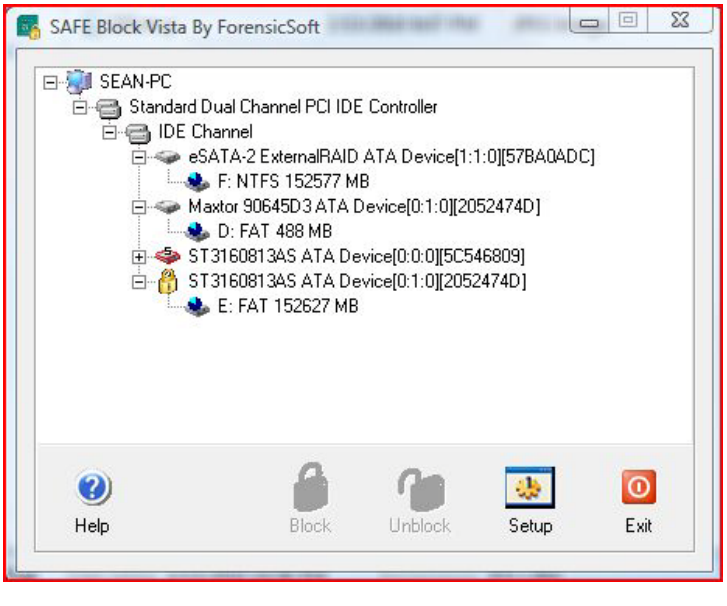


Table 14: SWB-07 MD5 Hash Values

Before SATA (Disk 1)	3d91647210528ffb5b534b4fa2498025
After SATA (Disk 1)	3d91647210528ffb5b534b4fa2498025
Before RAID (Disk 2)	42808cc496d1926e8545769d188f9cea
After RAID (Disk 2)	ef368bfa7b21a23c39b34afffc655814
Before PATA (Disk 3)	d4402f4c1613c30fc72a83a4d45dd0b6
After PATA (Disk 3)	6c6822ddf9bcd459a2b2d62b18a708c5

Table 15: SWB-07 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE PROTECTED


 ****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       0          8        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................       0         34       34
  Other CDB's ................      61          1       62
  Vendor SPecific CDB's ......       0         80       80
  Undefined CDB's.............       0         53       53

Testing device \\.\PhysicalDrive2
Device is software WRITE ENABLED


 ****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       8          0        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      34          0       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53

Testing device \\.\PhysicalDrive3
Device is software WRITE ENABLED


 ****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       8          0        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      34          0       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53
```

SWB-07 Test result analysis

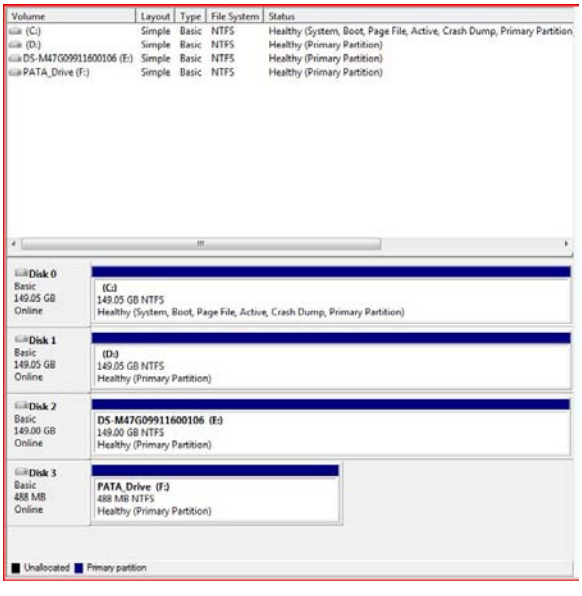
SAFE Block Vista Version 1.0 had one unexpected result in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disk and no commands were blocked on the unblocked disks.

8.8 Test Case SWB-08

This case tests SAFE Block Vista V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of three drives protected with the pattern UPU. The expected result of this test is SAFE Block Vista V1.0 will:

- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives

Figure 16: SWB-08 Drive Configuration



- System Disk
- Unblocked SATA Drive
- Blocked RAID Array
- Unlocked PATA Disk

Figure 17: SWB-08 SAFE Block Vista v1.0 Configuration

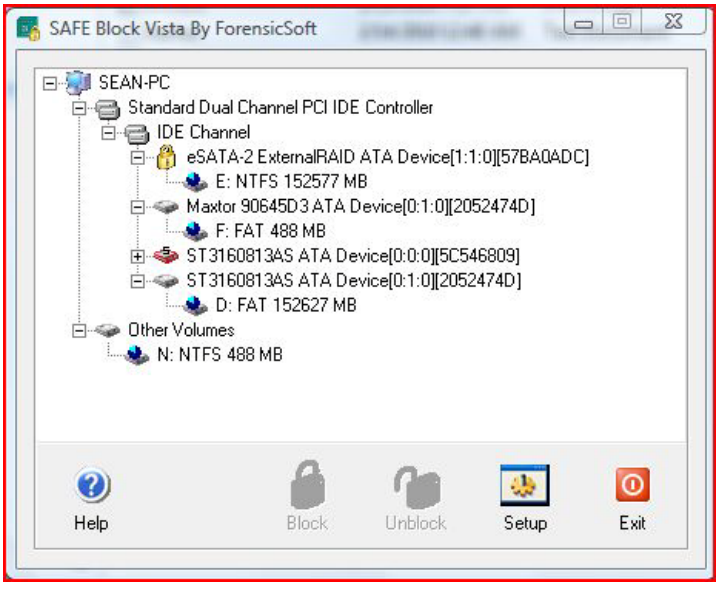


Table 16: SWB-08 MD5 Hash Values

Before SATA (Disk 1)	9758c0c61715d42a46f78256c6d6a795
After SATA (Disk 1)	4133907ebc825613fc6a663f0b32db77
Before RAID (Disk 2)	d4091d0867accb044c33d69cbcf42d9e
After RAID (Disk 2)	d4091d0867accb044c33d69cbcf42d9e
Before PATA (Disk 3)	d4402f4c1613c30fc72a83a4d45dd0b6
After PATA (Disk 3)	25124af9f6b2805748cc7928cb4bc52b

Table 17: SWB-08 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE ENABLED

 ****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       8          0        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      34          0       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53

Testing device \\.\PhysicalDrive2
Device is software WRITE PROTECTED

 ****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       0          8        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................       0         34       34
  Other CDB's ................      61          1       62
  Vendor SPecific CDB's ......       0         80       80
  Undefined CDB's.............       0         53       53

Testing device \\.\PhysicalDrive3
Device is software WRITE ENABLED

 ****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       8          0        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      34          0       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53
```

SWB-08 Test result analysis

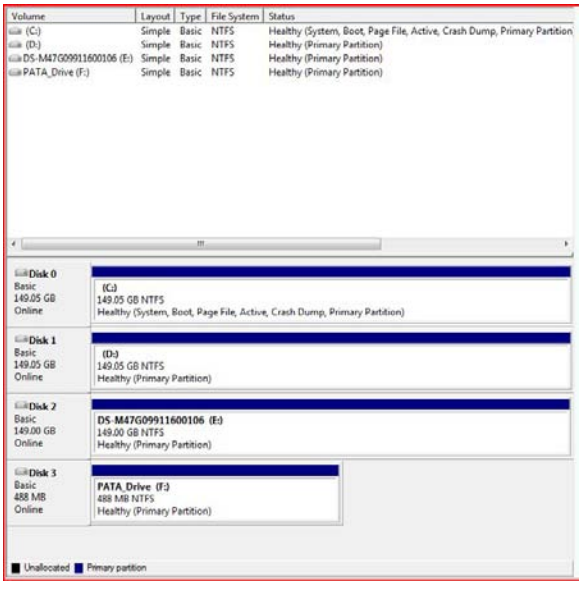
SAFE Block Vista Version 1.0 had one unexpected result in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disk and no commands were blocked on the unblocked disks.

8.9 Test Case SWB-09

This case tests SAFE Block Vista V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of three drives protected with the pattern UUP. The expected result of this test is SAFE Block Vista V1.0 will:

- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives

Figure 18: SWB-09 Drive Configuration



- System Disk
- Unblocked SATA Drive
- Unblocked RAID Array
- Blocked PATA Disk

Figure 19: SWB-09 SAFE Block Vista v1.0 Configuration

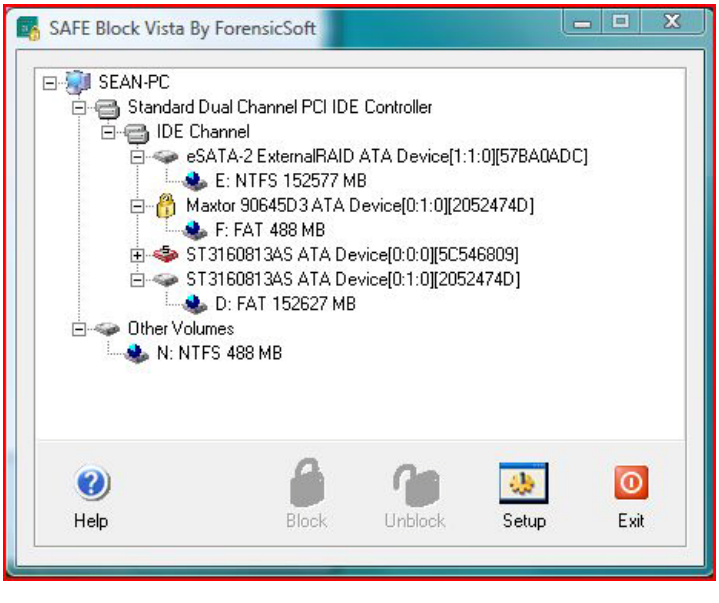


Table 18: SWB-09 MD5 Hash Values

Before SATA (Disk 1)	58f9442f02bedae2e3ef7f5abf65f578
After SATA (Disk 1)	eb3522a562f1e746a4ace7b0e050bc4a
Before RAID(Disk 2)	6d90b539ab63c9e54b2aaaa9fc484186
After RAID (Disk 2)	5776390c6ea7efd911ba9e1ec374dfcf
Before PATA (Disk 3)	2f3a3e422fbd410d3cea652e52663f73
After PATA (Disk 3)	2f3a3e422fbd410d3cea652e52663f73

Table 19: SWB-09 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE ENABLED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       8          0        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      34          0       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53

Testing device \\.\PhysicalDrive2
Device is software WRITE ENABLED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       8          0        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      34          0       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53

Testing device \\.\PhysicalDrive3
Device is software WRITE PROTECTED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       0          8        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................       0         34       34
  Other CDB's ................      61          1       62
  Vendor SPecific CDB's ......       0         80       80
  Undefined CDB's.............       0         53       53
```

SWB-09 Test result analysis

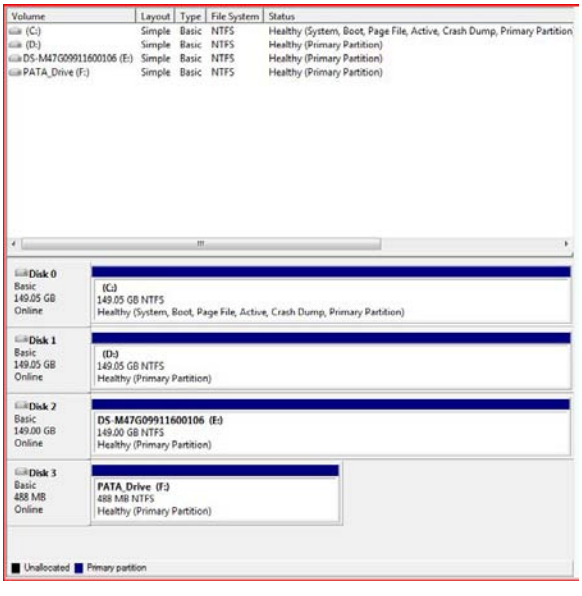
SAFE Block Vista Version 1.0 had one unexpected result in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disk and no commands were blocked on the unblocked disks.

8.10 Test Case SWB-10

This case tests SAFE Block Vista V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of three drives protected with the pattern UPP. The expected result of this test is SAFE Block Vista V1.0 will:

- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives

Figure 20: SWB-10 Drive Configuration



- System Disk
- Unblocked SATA Drive
- Blocked RAID Array
- Blocked PATA Disk

Figure 21: SWB-10 SAFE Block Vista v1.0 Configuration

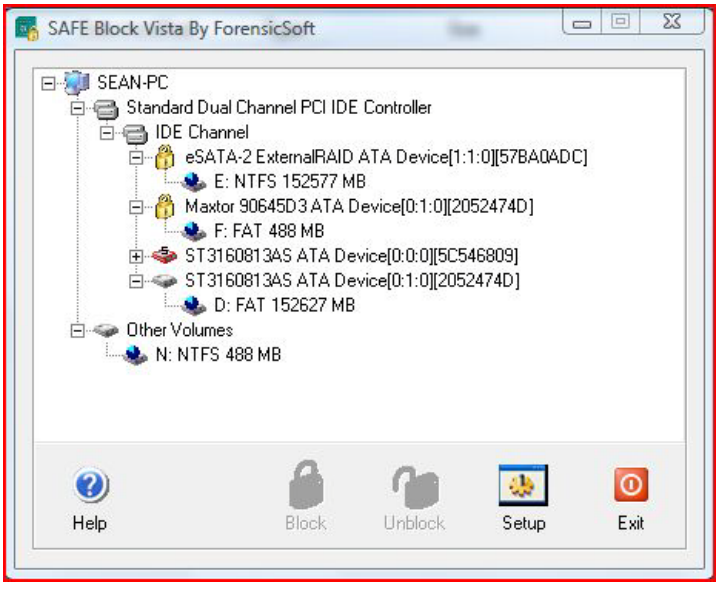


Table 20: SWB-10 MD5 Hash Values

Before SATA (Disk 1)	eb3522a562f1e746a4ace7b0e050bc4a
After SATA (Disk 1)	3ee0fc30f45cabea83b47f9a2b2cca11
Before RAID (Disk 2)	5776390c6ea7efd911ba9e1ec374dfcf
After RAID (Disk 2)	5776390c6ea7efd911ba9e1ec374dfcf
Before PATA (Disk 3)	2f3a3e422fbd410d3cea652e52663f73
After PATA (Disk 3)	2f3a3e422fbd410d3cea652e52663f73

Table 21: SWB-10 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE ENABLED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       8          0        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      34          0       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53

Testing device \\.\PhysicalDrive2
Device is software WRITE PROTECTED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       0          8        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................       0         34       34
  Other CDB's ................      61          1       62
  Vendor SPecific CDB's ......       0         80       80
  Undefined CDB's.............       0         53       53

Testing device \\.\PhysicalDrive3
Device is software WRITE PROTECTED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       0          8        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................       0         34       34
  Other CDB's ................      61          1       62
  Vendor SPecific CDB's ......       0         80       80
  Undefined CDB's.............       0         53       53
```

SWB-010 Test result analysis

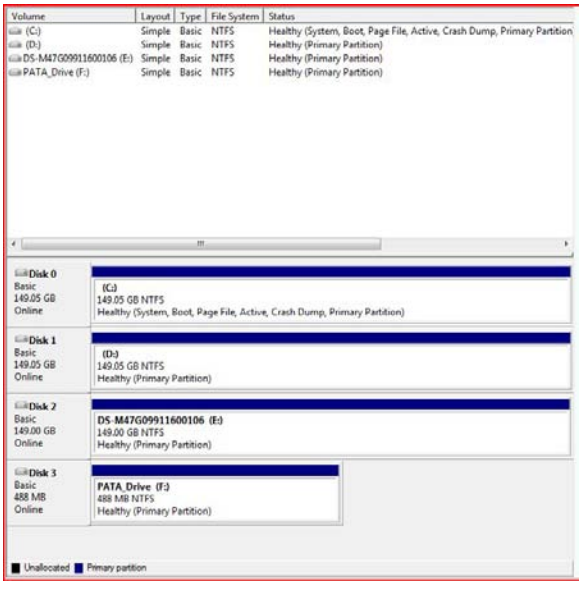
SAFE Block Vista Version 1.0 had one unexpected result twice in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disk and no commands were blocked on the unblocked disks.

8.11 Test Case SWB-11

This case tests SAFE Block Vista V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of three drives protected with the pattern PUP. The expected result of this test is SAFE Block Vista V1.0 will:

- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives

Figure 22: SWB-11 Drive Configuration



- System Disk
- Blocked SATA Drive
- Unblocked RAID Array
- Blocked PATA Disk

Figure 23: SWB-11 SAFE Block Vista v1.0 Configuration

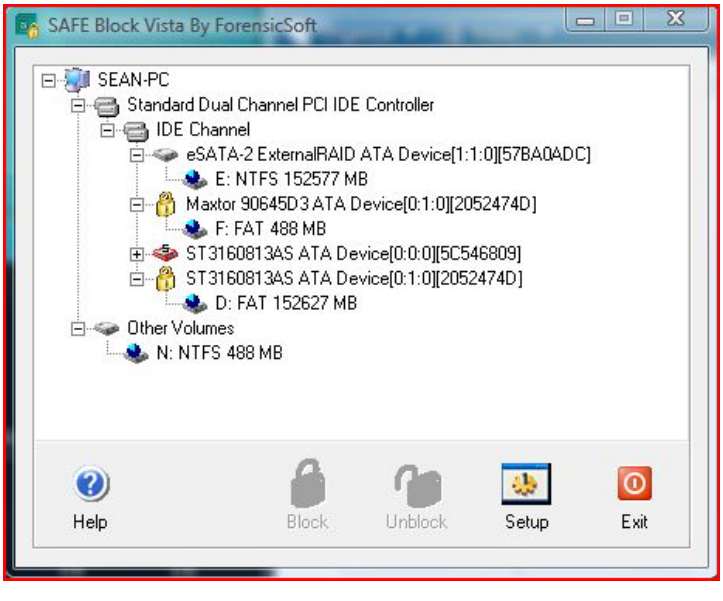


Table 22: SWB-11 MD5 Hash Values

Before SATA (Disk 1)	3ee0fc30f45cabea83b47f9a2b2cca11
After SATA (Disk 1)	3ee0fc30f45cabea83b47f9a2b2cca11
Before RAID (Disk 2)	615f55a97c6c532f0fbfdd12bfb2adba
After RAID (Disk 2)	db38618ddb307a872a3af624d79e7b2a
Before PATA (Disk 3)	2f3a3e422fbd410d3cea652e52663f73
After PATA (Disk 3)	2f3a3e422fbd410d3cea652e52663f73

Table 23: SWB-11 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE PROTECTED

 ****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       0          8        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................       0         34       34
  Other CDB's ................      61          1       62
  Vendor SPecific CDB's ......       0         80       80
  Undefined CDB's.............       0         53       53

Testing device \\.\PhysicalDrive2
Device is software WRITE ENABLED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       8          0        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      34          0       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53

Testing device \\.\PhysicalDrive3
Device is software WRITE PROTECTED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       0          8        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................       0         34       34
  Other CDB's ................      61          1       62
  Vendor SPecific CDB's ......       0         80       80
  Undefined CDB's.............       0         53       53
```

SWB-011 Test result analysis

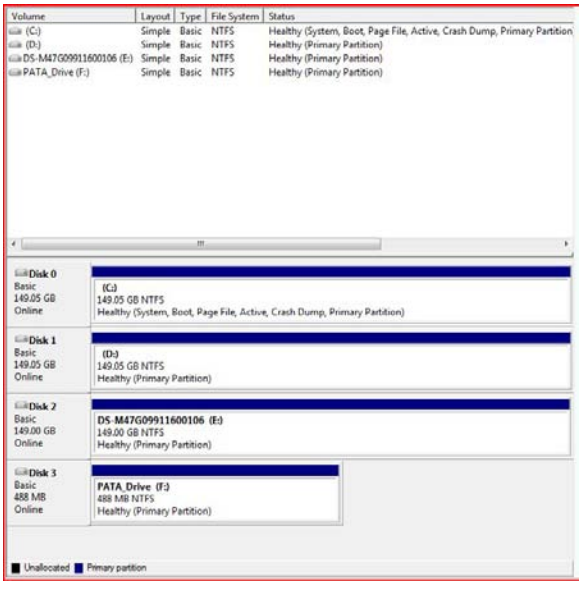
SAFE Block Vista Version 1.0 had one unexpected result twice in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disk and no commands were blocked on the unblocked disks.

8.12 Test Case SWB-12

This case tests SAFE Block Vista V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of three drives protected with the pattern PPU. The expected result of this test is SAFE Block Vista V1.0 will:

- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives

Figure 24: SWB-12 Drive Configuration



- System Disk
- Blocked SATA Drive
- Blocked RAID Array
- Unblocked PATA Disk

Figure 25: SWB-12 SAFE Block Vista v1.0 Configuration

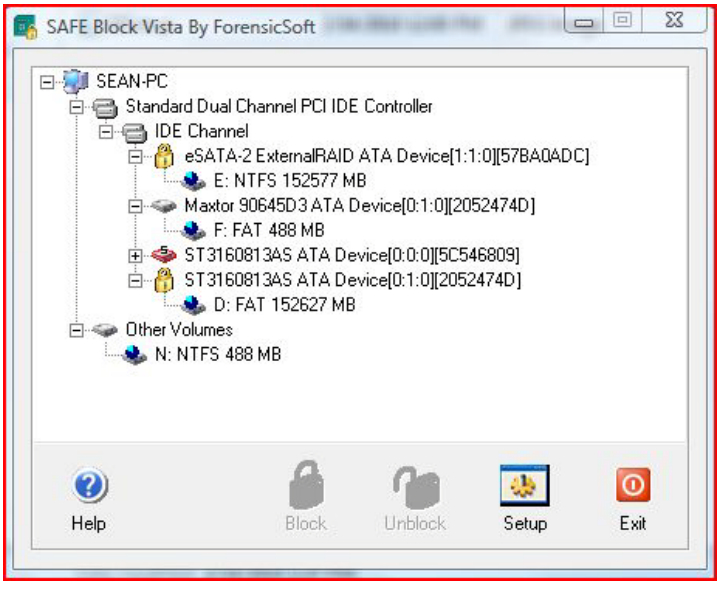


Table 24: SWB-12 MD5 Hash Values

Before SATA (Disk 1)	3ee0fc30f45cabea83b47f9a2b2cca11
After SATA (Disk 1)	3ee0fc30f45cabea83b47f9a2b2cca11
Before RAID (Disk 2)	db38618ddb307a872a3af624d79e7b2a
After RAID (Disk 2)	db38618ddb307a872a3af624d79e7b2a
Before PATA (Disk 3)	5c3ce1ccc736cd6e2762a78879547759
After PATA (Disk 3)	366833d72845bcd4797885eed706cd33

Table 25: SWB-12 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE PROTECTED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       0          8        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................       0         34       34
  Other CDB's ................      61          1       62
  Vendor SPecific CDB's ......       0         80       80
  Undefined CDB's.............       0         53       53

Testing device \\.\PhysicalDrive2
Device is software WRITE PROTECTED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       0          8        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................       0         34       34
  Other CDB's ................      61          1       62
  Vendor SPecific CDB's ......       0         80       80
  Undefined CDB's.............       0         53       53

Testing device \\.\PhysicalDrive3
Device is software WRITE ENABLED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       8          0        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      34          0       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53
```

SWB-012 Test result analysis

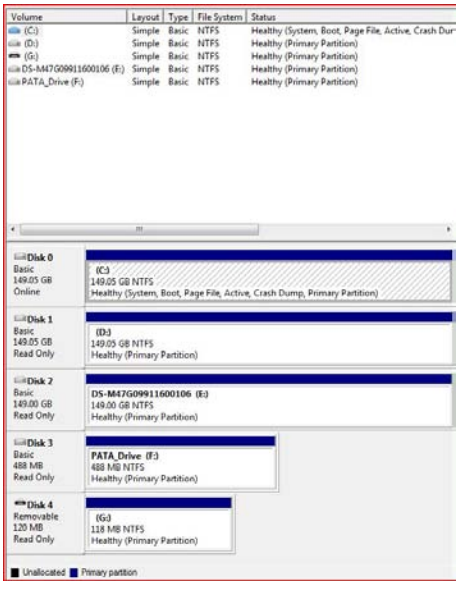
SAFE Block Vista Version 1.0 had one unexpected result twice in this test – Variation 1 described in Section 2.1 Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disk and no commands were blocked on the unblocked disks.

8.13 Test Case SWB-13

This case tests SAFE Block Vista V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of four drives protected with the pattern PUUP. The expected result of this test is SAFE Block Vista V1.0 will:

- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives

Figure 26: SWB-13 Drive Configuration



- System Disk
- Blocked SATA Disk
- Unblocked RAID Array
- Unblocked PATA Drive
- Blocked USB Drive

Figure 27: SWB-13 SAFE Block Vista v1.0 Configuration

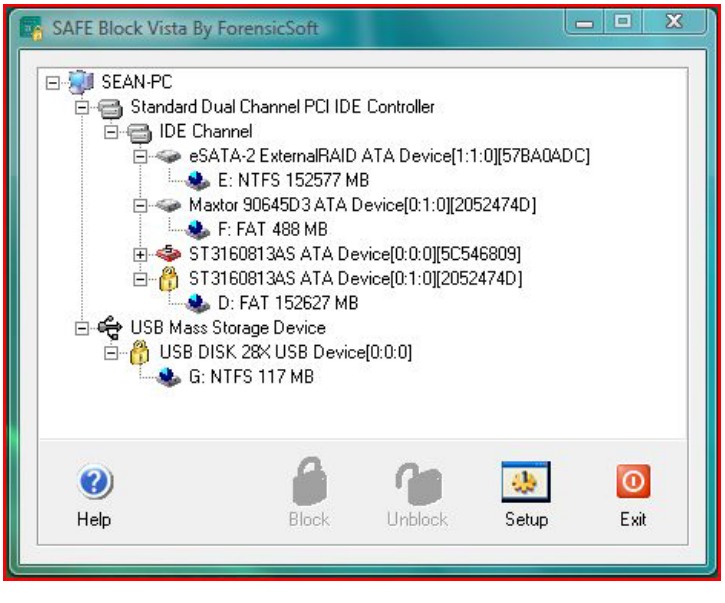


Table 26: SWB-13 MD5 Hash Values

Before SATA (Disk 1)	3ee0fc30f45cabea83b47f9a2b2cca11
After SATA (Disk 1)	3ee0fc30f45cabea83b47f9a2b2cca11
Before RAID (Disk 2)	91185cb1be030204bfb273095d5b91c6
After RAID (Disk 2)	5b861cb01585e27de13a064a99c8bce3
Before PATA (Disk 3)	88abaa528c5d6e0eb76487bddcf048a3
After PATA (Disk 3)	39321c6541d5b55d1262dc9b0b6812e2
Before USB (Disk 4)	ece72f438b9b810bae6ec218402c7a5f
After USB (Disk 4)	ece72f438b9b810bae6ec218402c7a5f

Table 27: SWB-13 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE PROTECTED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       0          8        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................       0         34       34
  Other CDB's ................      61          1       62
  Vendor SPecific CDB's ......       0         80       80
  Undefined CDB's.............       0         53       53

Testing device \\.\PhysicalDrive2
Device is software WRITE ENABLED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       8          0        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      34          0       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53

Testing device \\.\PhysicalDrive3
Device is software WRITE ENABLED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       8          0        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      34          0       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53

Testing device \\.\PhysicalDrive4
Device is software WRITE PROTECTED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       0          8        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................       0         34       34
  Other CDB's ................      61          1       62
  Vendor SPecific CDB's ......       0         80       80
  Undefined CDB's.............       0         53       53
```

SWB-013 Test result analysis

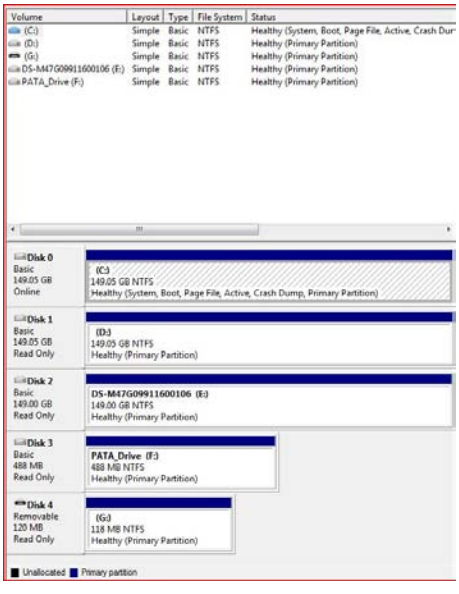
SAFE Block Vista Version 1.0 had one unexpected result twice in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disk and no commands were blocked to the unblocked disks.

8.14 Test Case SWB-14

This case tests SAFE Block Vista V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of four drives protected with the pattern UUPP. The expected result of this test is SAFE Block Vista V1.0 will:

- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives

Figure 28: SWB-14 Drive Configuration



- System Disk
- Unblocked SATA Disk
- Unblocked RAID Array
- Blocked PATA Drive
- Blocked USB Drive

Figure 29: SWB-14 SAFE Block Vista v1.0 Configuration

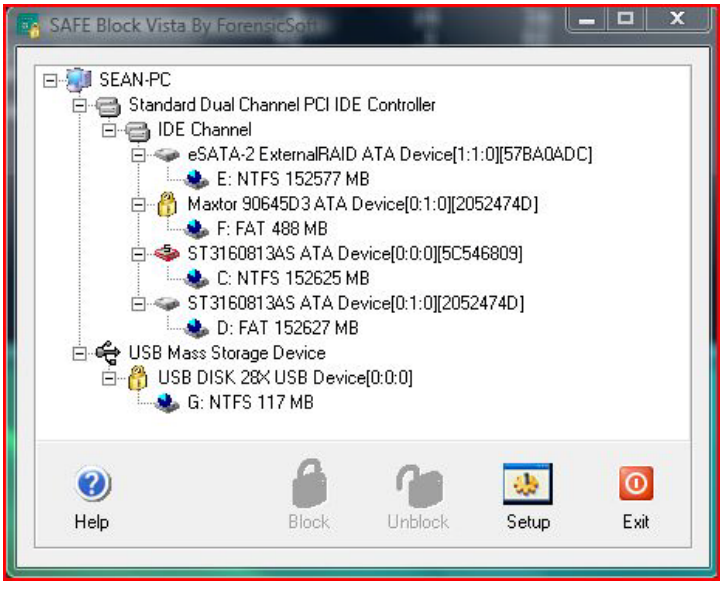


Table 28: SWB-14 MD5 Hash Values

Before SATA (Disk 1)	3ee0fc30f45cabea83b47f9a2b2cca11
After SATA (Disk 1)	8d58912aa83ec83f17ab694d9108e16e
Before RAID (Disk 2)	5b861cb01585e27de13a064a99c8bce3
After RAID (Disk 2)	401cdff25fbfe04d5f4c27f3353bc58a
Before PATA (Disk 3)	39321c6541d5b55d1262dc9b0b6812e2
After PATA (Disk 3)	39321c6541d5b55d1262dc9b0b6812e2
Before USB (Disk 4)	ece72f438b9b810bae6ec218402c7a5f
After USB (Disk 4)	ece72f438b9b810bae6ec218402c7a5f

Table 29: SWB-14 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE ENABLED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       8          0        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      34          0       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53

Testing device \\.\PhysicalDrive2
Device is software WRITE ENABLED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       8          0        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      34          0       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53

Testing device \\.\PhysicalDrive3
Device is software WRITE PROTECTED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       0          8        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................       0         34       34
  Other CDB's ................      61          1       62
  Vendor SPecific CDB's ......       0         80       80
  Undefined CDB's.............       0         53       53

Testing device \\.\PhysicalDrive4
Device is software WRITE PROTECTED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       0          8        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................       0         34       34
  Other CDB's ................      61          1       62
  Vendor SPecific CDB's ......       0         80       80
  Undefined CDB's.............       0         53       53
```

SWB-014 Test result analysis

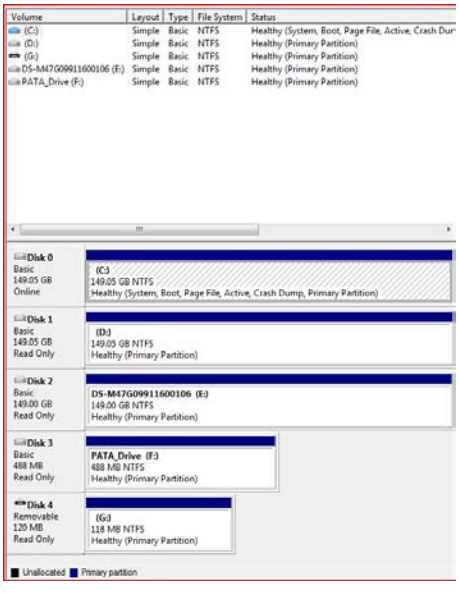
SAFE Block Vista Version 1.0 had one unexpected result twice in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disk and no commands were blocked to the unprotected disk.

8.15 Test Case SWB-15

This case tests SAFE Block Vista V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of four drives protected with the pattern UPPP. The expected result of this test is SAFE Block Vista V1.0 will:

- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives

Figure 30: SWB-15 Drive Configuration



- System Disk
- Unblocked SATA Disk
- Blocked RAID Array
- Blocked PATA Drive
- Blocked USB Drive

Figure 31: SWB-15 SAFE Block Vista v1.0 Configuration

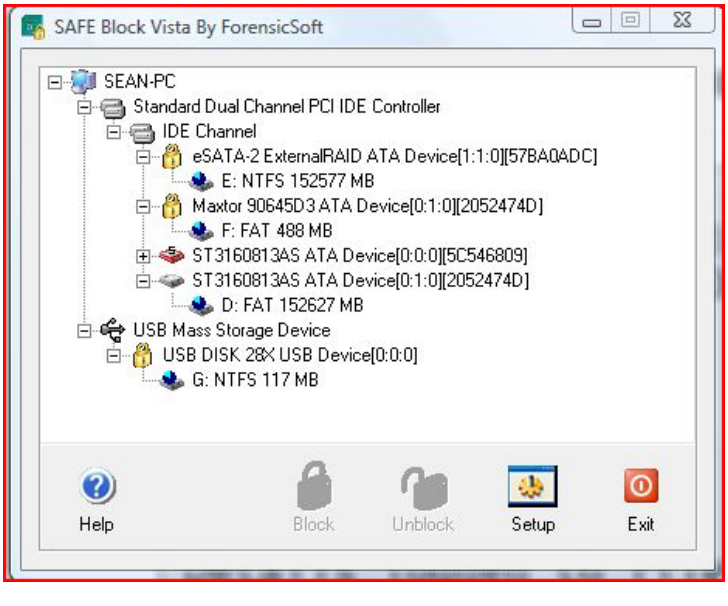


Table 30: SWB-15 MD5 Hash Values

Before SATA (Disk 1)	8d58912aa83ec83f17ab694d9108e16e
After SATA (Disk 1)	3311ae88a0449c1549b9913e4da1075a
Before RAID (Disk 2)	401cdff25fbfe04d5f4c27f3353bc58a
After RAID (Disk 2)	401cdff25fbfe04d5f4c27f3353bc58a
Before PATA (Disk 3)	39321c6541d5b55d1262dc9b0b6812e2
After PATA (Disk 3)	39321c6541d5b55d1262dc9b0b6812e2
Before USB (Disk 4)	ece72f438b9b810bae6ec218402c7a5f
After USB (Disk 4)	ece72f438b9b810bae6ec218402c7a5f

Table 31: SWB-15 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device ¥¥.¥PhysicalDrive1
Device is software WRITE ENABLED

****************** TEST RESULTS SUMMARY *****************

      Test Category         Allowed   Blocked   Total
-------------------------------------------------------------
  Read IRP's ..............      4         0       4
  Write IRP's .............      8         0       8
  Other IRP's .............     15         0      15

  Read CDB's  .............     27         0      27
  Write CDB's .............     34         0      34
  Other CDB's .............     62         0      62
  Vendor Specific CDB's ......  80         0      80
  Undefined CDB's..........     53         0      53

Testing device ¥¥.¥PhysicalDrive2
Device is software WRITE PROTECTED

****************** TEST RESULTS SUMMARY *****************

      Test Category         Allowed   Blocked   Total
-------------------------------------------------------------
  Read IRP's ..............      4         0       4
  Write IRP's .............      0         8       8
  Other IRP's .............     15         0      15

  Read CDB's  .............     27         0      27
  Write CDB's .............      0        34      34
  Other CDB's .............     61         1      62
  Vendor Specific CDB's ......  0        80      80
  Undefined CDB's..........     0        53      53

Testing device ¥¥.¥PhysicalDrive3
Device is software WRITE PROTECTED

****************** TEST RESULTS SUMMARY *****************

      Test Category         Allowed   Blocked   Total
-------------------------------------------------------------
  Read IRP's ..............      4         0       4
  Write IRP's .............      0         8       8
  Other IRP's .............     15         0      15

  Read CDB's  .............     27         0      27
  Write CDB's .............      0        34      34
  Other CDB's .............     61         1      62
  Vendor Specific CDB's ......  0        80      80
  Undefined CDB's..........     0        53      53

Testing device ¥¥.¥PhysicalDrive4
Device is software WRITE PROTECTED

****************** TEST RESULTS SUMMARY *****************

      Test Category         Allowed   Blocked   Total
-------------------------------------------------------------
  Read IRP's ..............      4         0       4
  Write IRP's .............      0         8       8
  Other IRP's .............     15         0      15

  Read CDB's  .............     27         0      27
  Write CDB's .............      0        34      34
  Other CDB's .............     61         1      62
  Vendor Specific CDB's ......  0        80      80
  Undefined CDB's..........     0        53      53
```

SWB-015 Test result analysis

SAFE Block Vista Version 1.0 had one unexpected result three times in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disk and no commands were blocked to the unprotected disk.

8.16 Test Case SWB-16

This case tests SAFE Block Vista V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of four drives protected with the pattern UPUP. The expected result of this test is SAFE Block Vista V1.0 will:

- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives

Figure 32: SWB-16 Drive Configuration

- System Disk
- Unblocked SATA Disk
- Blocked RAID Array
- Unblocked PATA Drive
- Blocked USB Drive

Figure 33: SWB-16 SAFE Block Vista v1.0 Configuration

Table 32: SWB-16 MD5 Hash Values

Before SATA (Disk 1)	3311ae88a0449c1549b9913e4da1075a
After SATA (Disk 1)	1075a59886c1b1c8ab70ca06d0473deb
Before RAID (Disk 2)	401cdff25fbfe04d5f4c27f3353bc58a
After RAID (Disk 2)	401cdff25fbfe04d5f4c27f3353bc58a
Before PATA (Disk 3)	dc49230902fda3a4a1dafd8366ea1290
After PATA (Disk 3)	1231268186b13101892b83704b193e86
Before USB (Disk 4)	ece72f438b9b810bae6ec218402c7a5f
After USB (Disk 4)	ece72f438b9b810bae6ec218402c7a5f

Table 33: SWB-16 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE ENABLED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       8          0        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      34          0       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53

Testing device \\.\PhysicalDrive2
Device is software WRITE PROTECTED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       0          8        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................       0         34       34
  Other CDB's ................      61          1       62
  Vendor SPecific CDB's ......       0         80       80
  Undefined CDB's.............       0         53       53

Testing device \\.\PhysicalDrive3
Device is software WRITE ENABLED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       8          0        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      34          0       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53

Testing device \\.\PhysicalDrive4
Device is software WRITE PROTECTED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       0          8        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................       0         34       34
  Other CDB's ................      61          1       62
  Vendor SPecific CDB's ......       0         80       80
  Undefined CDB's.............       0         53       53
```

SWB-016 Test result analysis

SAFE Block Vista Version 1.0 had one unexpected result twice in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disks and no commands were blocked to the unprotected disks.

8.17 Test Case SWB-17

This case tests SAFE Block Vista V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of four drives protected with the pattern PUPU. The expected result of this test is SAFE Block Vista V1.0 will:

- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives

Figure 34: SWB-17 Drive Configuration

- System Disk
- Blocked SATA Disk
- Unblocked RAID Array
- Blocked PATA Drive
- Unblocked USB Drive

Figure 35: SWB-17 SAFE Block Vista v1.0 Configuration

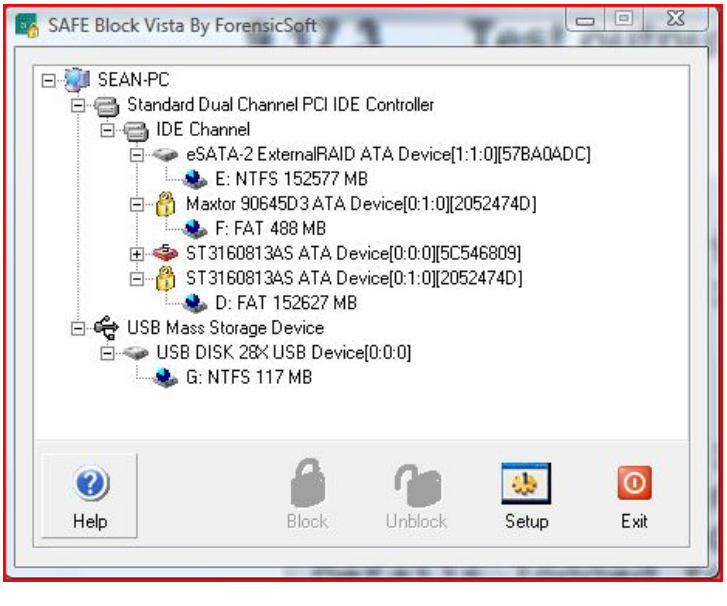


Table 34: SWB-17 MD5 Hash Values

Before SATA (Disk 1)	1075a59886c1b1c8ab70ca06d0473deb
After SATA (Disk 1)	1075a59886c1b1c8ab70ca06d0473deb
Before RAID (Disk 2)	401cdff25fbfe04d5f4c27f3353bc58a
After RAID (Disk 2)	3311ae88a0449c1549b9913e4da1075a
Before PATA (Disk 3)	1231268186b13101892b83704b193e86
After PATA (Disk 3)	1231268186b13101892b83704b193e86
Before USB (Disk 4)	ece72f438b9b810bae6ec218402c7a5f
After USB (Disk 4)	69aa8414a980f85fd274a968096f86f3

Table 35: SWB-17 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE PROTECTED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       0          8        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................       0         34       34
  Other CDB's ................      61          1       62
  Vendor SPecific CDB's ......       0         80       80
  Undefined CDB's.............       0         53       53

Testing device \\.\PhysicalDrive2
Device is software WRITE ENABLED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       8          0        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      34          0       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53

Testing device \\.\PhysicalDrive3
Device is software WRITE PROTECTED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       0          8        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................       0         34       34
  Other CDB's ................      61          1       62
  Vendor SPecific CDB's ......       0         80       80
  Undefined CDB's.............       0         53       53

Testing device \\.\PhysicalDrive4
Device is software WRITE ENABLED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       8          0        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      34          0       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53
```

SWB-017 Test result analysis

SAFE Block Vista Version 1.0 had one unexpected result twice in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disks and no commands were blocked to the unprotected disks.

8.18 Test Case SWB-18

This case tests SAFE Block Vista V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of four drives protected with the pattern PPUU. The expected result of this test is SAFE Block Vista V1.0 will:

- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives

Figure 36: SWB-18 Drive Configuration

- System Disk
- Blocked SATA Disk
- Blocked RAID Array
- Unblocked PATA Drive
- Unblocked USB Drive

Figure 37: SWB-18 SAFE Block Vista v1.0 Configuration

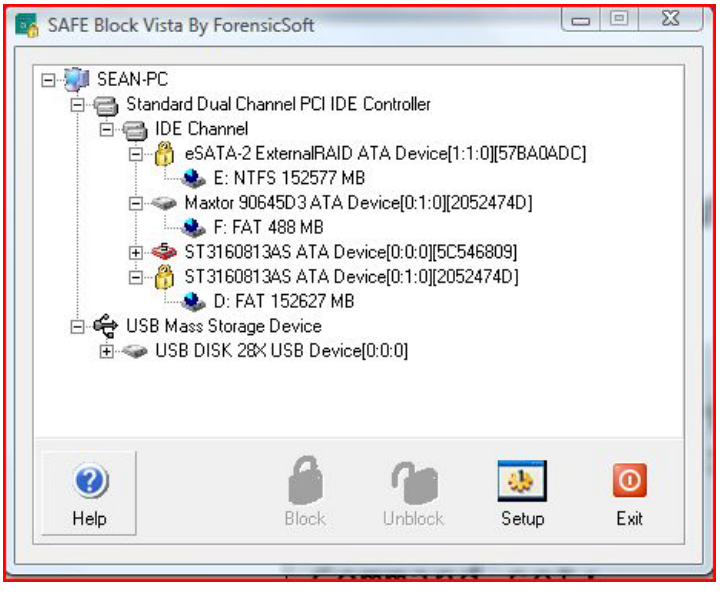


Table 36: SWB-18 MD5 Hash Values

Before SATA (Disk 1)	1075a59886c1b1c8ab70ca06d0473deb
After SATA (Disk 1)	1075a59886c1b1c8ab70ca06d0473deb
Before RAID (Disk 2)	3311ae88a0449c1549b9913e4da1075a
After RAID (Disk 2)	3311ae88a0449c1549b9913e4da1075a
Before PATA (Disk 3)	1231268186b13101892b83704b193e86
After PATA (Disk 3)	703af58acfbde264a9586bd3250206d1
Before USB (Disk 4)	69aa8414a980f85fd274a968096f86f3
After USB (Disk 4)	13a867a51d4aa579f78c0b29431915ed

Table 37: SWB-18 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE PROTECTED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       0          8        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................       0         34       34
  Other CDB's ................      61          1       62
  Vendor SPecific CDB's ......       0         80       80
  Undefined CDB's.............       0         53       53

Testing device \\.\PhysicalDrive2
Device is software WRITE PROTECTED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       0          8        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................       0         34       34
  Other CDB's ................      61          1       62
  Vendor SPecific CDB's ......       0         80       80
  Undefined CDB's.............       0         53       53

Testing device \\.\PhysicalDrive3
Device is software WRITE ENABLED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       8          0        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      34          0       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53

Testing device \\.\PhysicalDrive4
Device is software WRITE ENABLED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       8          0        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      34          0       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53
```

SWB-018 Test result analysis

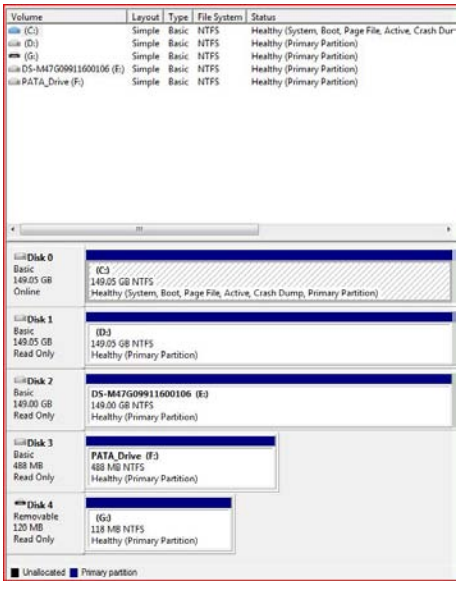
SAFE Block Vista Version 1.0 had one unexpected result twice in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disks and no commands were blocked to the unprotected disks.

8.19 Test Case SWB-19

This case tests SAFE Block Vista V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of four drives protected with the pattern PUUU. The expected result of this test is SAFE Block Vista V1.0 will:

- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives

Figure 38: SWB-19 Drive Configuration



- System Disk
- Blocked SATA Disk
- Unblocked RAID Array
- Unblocked PATA Drive
- Unblocked USB Drive

Figure 39: SWB-19 SAFE Block Vista v1.0 Configuration

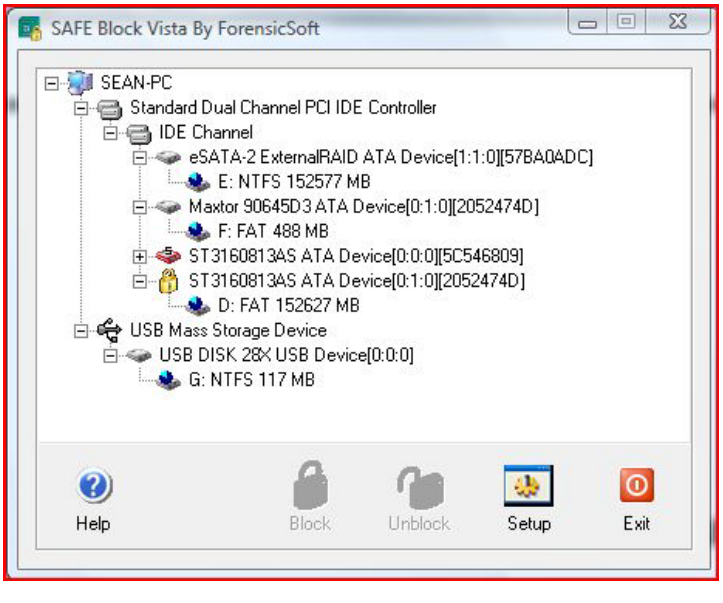


Table 38: SWB-19 MD5 Hash Values

Before SATA (Disk 1)	1075a59886c1b1c8ab70ca06d0473deb
After SATA (Disk 1)	1075a59886c1b1c8ab70ca06d0473deb
Before RAID (Disk 2)	3311ae88a0449c1549b9913e4da1075a
After RAID (Disk 2)	17462e2890ce61c814a759f1c0373143
Before PATA (Disk 3)	703af58acfbde264a9586bd3250206d1
After PATA (Disk 3)	4fee74d6757a21f2d66800d9c38ac5a4
Before USB (Disk 4)	13a867a51d4aa579f78c0b29431915ed
After USB (Disk 4)	4be861b7fda24c6c510e33569485f452

Table 39: SWB-19 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE PROTECTED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       0          8        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................       0         34       34
  Other CDB's ................      61          1       62
  Vendor SPecific CDB's ......       0         80       80
  Undefined CDB's.............       0         53       53

Testing device \\.\PhysicalDrive2
Device is software WRITE ENABLED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       8          0        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      34          0       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53

Testing device \\.\PhysicalDrive3
Device is software WRITE ENABLED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       8          0        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      34          0       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53

Testing device \\.\PhysicalDrive4
Device is software WRITE ENABLED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       8          0        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      34          0       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53
```

SWB-019 Test result analysis

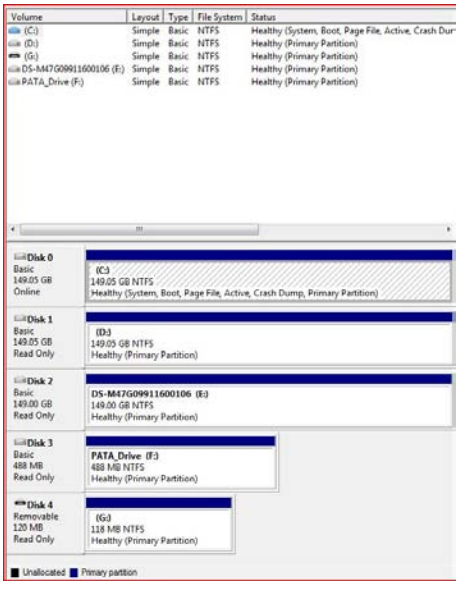
SAFE Block Vista Version 1.0 had one unexpected result in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disks and no commands were blocked to the unprotected disk.

8.20 Test Case SWB-20

This case tests SAFE Block Vista V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of four drives protected with the pattern UPPU. The expected result of this test is SAFE Block Vista V1.0 will:

- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives

Figure 40: SWB-20 Drive Configuration



- System Disk
- Unblocked SATA Disk
- Blocked RAID Array
- Blocked PATA Drive
- Unblocked USB Drive

Figure 41: SWB-20 SAFE Block Vista v1.0 Configuration

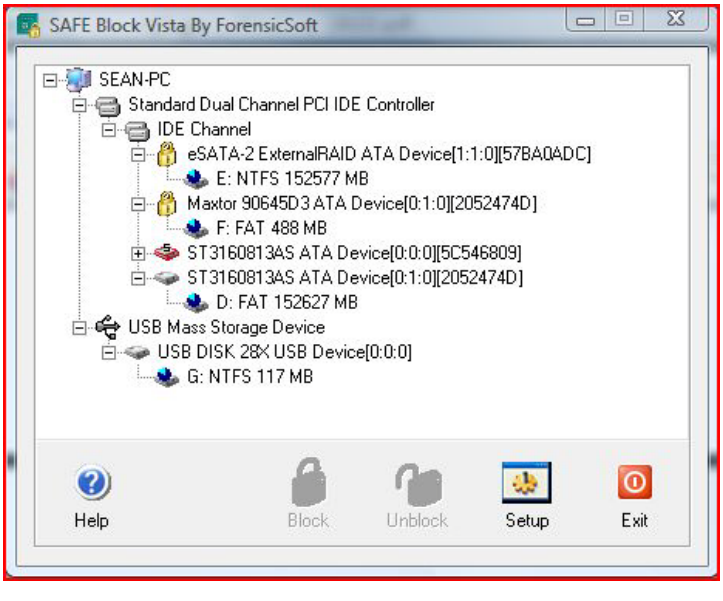


Table 40: SWB-20 MD5 Hash Values

Before SATA (Disk 1)	c648507b7d43dfa6176ae67e6585fb58
After SATA (Disk 1)	cbded0f02c4eb04fe1da107b3e6caa5f
Before RAID (Disk 2)	17462e2890ce61c814a759f1c0373143
After RAID (Disk 2)	17462e2890ce61c814a759f1c0373143
Before PATA (Disk 3)	4fee74d6757a21f2d66800d9c38ac5a4
After PATA (Disk 3)	4fee74d6757a21f2d66800d9c38ac5a4
Before USB (Disk 4)	13a867a51d4aa579f78c0b29431915ed
After USB (Disk 4)	8293ff363d9037e4a27696c20aadb7b7

Table 41: SWB-20 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE ENABLED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       8          0        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      34          0       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53

Testing device \\.\PhysicalDrive2
Device is software WRITE PROTECTED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       0          8        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................       0         34       34
  Other CDB's ................      61          1       62
  Vendor SPecific CDB's ......       0         80       80
  Undefined CDB's.............       0         53       53

Testing device \\.\PhysicalDrive3
Device is software WRITE PROTECTED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       0          8        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................       0         34       34
  Other CDB's ................      61          1       62
  Vendor SPecific CDB's ......       0         80       80
  Undefined CDB's.............       0         53       53

Testing device \\.\PhysicalDrive4
Device is software WRITE ENABLED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       8          0        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      34          0       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53
```

SWB-020 Test result analysis

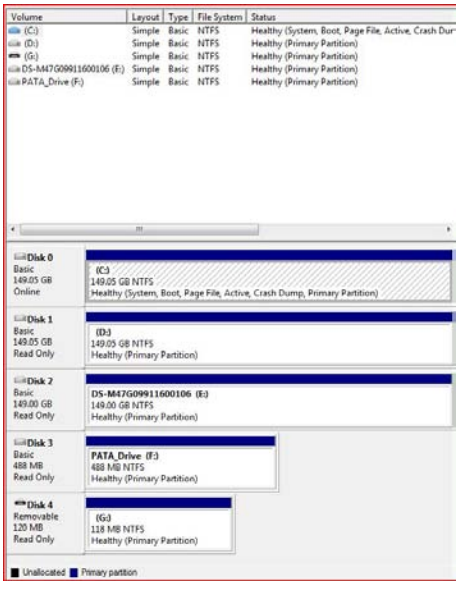
SAFE Block Vista Version 1.0 had one unexpected result twice in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disks and no commands were blocked to the unprotected disks.

8.21 Test Case SWB-21

This case tests SAFE Block Vista V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of four drives protected with the pattern PPPU. The expected result of this test is SAFE Block Vista V1.0 will:

- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives

Figure 42: SWB-21 Drive Configuration



- System Disk
- Blocked SATA Disk
- Blocked RAID Array
- Blocked PATA Drive
- Unblocked USB Drive

Figure 43: SWB-21 SAFE Block Vista v1.0 Configuration

Table 42: SWB-21 MD5 Hash Values

Before SATA (Disk 1)	cbded0f02c4eb04fe1da107b3e6caa5f
After SATA (Disk 1)	cbded0f02c4eb04fe1da107b3e6caa5f
Before RAID (Disk 2)	792cfd4bd4e07512345b1ccac37dec4c
After RAID (Disk 2)	792cfd4bd4e07512345b1ccac37dec4c
Before PATA (Disk 3)	4fee74d6757a21f2d66800d9c38ac5a4
After PATA (Disk 3)	4fee74d6757a21f2d66800d9c38ac5a4
Before USB (Disk 4)	8293ff363d9037e4a27696c20aadb7b7
After USB (Disk 4)	9a147af6dfd03456f95e6c8c616a7ea7

Table 43: SWB-21 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE PROTECTED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       0          8        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................       0         34       34
  Other CDB's ................      61          1       62
  Vendor SPecific CDB's ......       0         80       80
  Undefined CDB's.............       0         53       53

Testing device \\.\PhysicalDrive2
Device is software WRITE PROTECTED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       0          8        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................       0         34       34
  Other CDB's ................      61          1       62
  Vendor SPecific CDB's ......       0         80       80
  Undefined CDB's.............       0         53       53

Testing device \\.\PhysicalDrive3
Device is software WRITE PROTECTED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       0          8        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................       0         34       34
  Other CDB's ................      61          1       62
  Vendor SPecific CDB's ......       0         80       80
  Undefined CDB's.............       0         53       53

Testing device \\.\PhysicalDrive4
Device is software WRITE ENABLED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       8          0        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      34          0       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53
```

SWB-021 Test result analysis

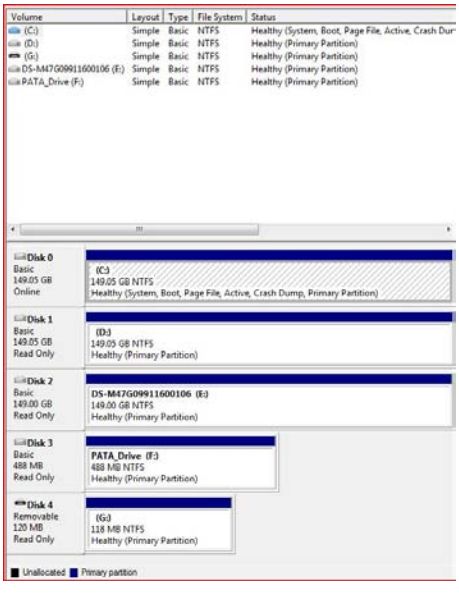
SAFE Block Vista Version 1.0 had one unexpected result three times in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disks and no commands were blocked to the unprotected disk.

8.22 Test Case SWB-22

This case tests SAFE Block Vista V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of four drives protected with the pattern UUUP. The expected result of this test is SAFE Block Vista V1.0 will:

- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives

Figure 44: SWB-22 Drive Configuration



- System Disk
- Unblocked SATA Disk
- Unblocked RAID Array
- Unblocked PATA Drive
- Blocked USB Drive

Figure 45: SWB-22 SAFE Block Vista v1.0 Configuration

Table 44: SWB-22 MD5 Hash Values

Before SATA (Disk 1)	cbded0f02c4eb04fe1da107b3e6caa5f
After SATA (Disk 1)	5ac4e0e42c579894e7b0e75b65ab38f1
Before RAID (Disk 2)	792cfd4bd4e07512345b1ccac37dec4c
After RAID (Disk 2)	91a084ba4e557e0437a7a2af1f0a7fe4
Before PATA (Disk 3)	4fee74d6757a21f2d66800d9c38ac5a4
After PATA (Disk 3)	c56dc281258af8b5ad901567ac5a2e22
Before USB (Disk 4)	9a147af6dfd03456f95e6c8c616a7ea7
After USB (Disk 4)	9a147af6dfd03456f95e6c8c616a7ea7

Table 45: SWB-22 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE ENABLED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       8          0        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      34          0       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53

Testing device \\.\PhysicalDrive2
Device is software WRITE ENABLED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       8          0        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      34          0       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53

Testing device \\.\PhysicalDrive3
Device is software WRITE ENABLED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       8          0        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      34          0       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53

Testing device \\.\PhysicalDrive4
Device is software WRITE PROTECTED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       0          8        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................       0         34       34
  Other CDB's ................      61          1       62
  Vendor SPecific CDB's ......       0         80       80
  Undefined CDB's.............       0         53       53
```

SWB-022 Test result analysis

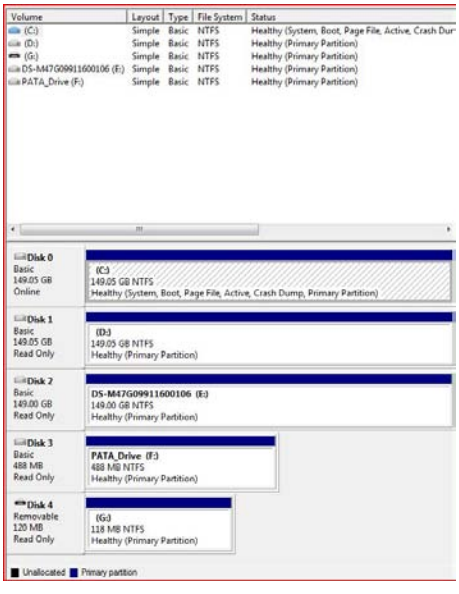
SAFE Block Vista Version 1.0 had one unexpected result in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disk and no commands were blocked to the unprotected disks.

8.23 Test Case SWB-23

This case tests SAFE Block Vista V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-08. It is run using the BOOT protocol, in which all configured drives are protected, the system is rebooted and all possible commands issued to all drives. The expected result of this test is SAFE Block Vista V1.0 will:

- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives
- Display a message indicating each command blocked

Figure 46: SWB-23 Drive Configuration



- System Disk
- Blocked SATA Disk
- Blocked RAID Array
- Blocked PATA Drive
- Blocked USB Drive

Figure 47: SWB-23 SAFE Block Vista v1.0 Configuration

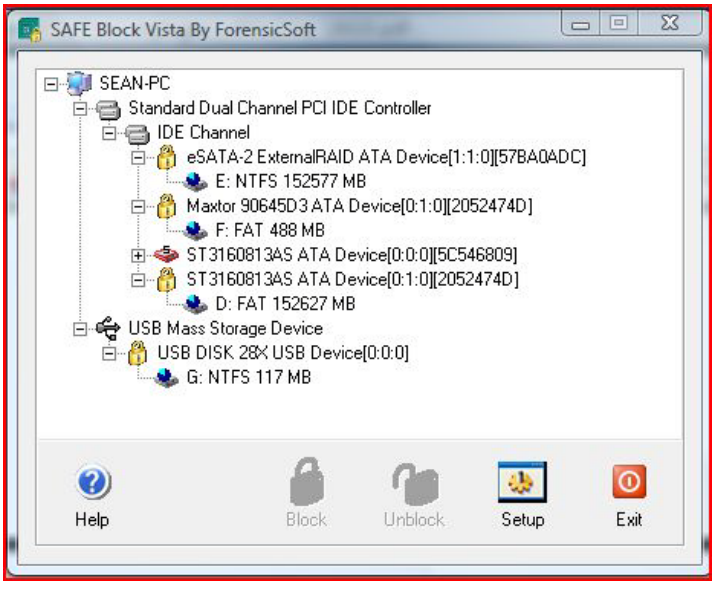


Table 46: SWB-23 MD5 Hash Values

Before SATA (Disk 1)	5ac4e0e42c579894e7b0e75b65ab38f1
After SATA (Disk 1)	5ac4e0e42c579894e7b0e75b65ab38f1
Before RAID (Disk 2)	91a084ba4e557e0437a7a2af1f0a7fe4
After RAID (Disk 2)	91a084ba4e557e0437a7a2af1f0a7fe4
Before PATA (Disk 3)	c56dc281258af8b5ad901567ac5a2e22
After PATA (Disk 3)	c56dc281258af8b5ad901567ac5a2e22
Before USB (Disk 4)	9a147af6dfd03456f95e6c8c616a7ea7
After USB (Disk 4)	9a147af6dfd03456f95e6c8c616a7ea7

Table 47: SWB-23 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE PROTECTED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       0          8        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................       0         34       34
  Other CDB's ................      61          1       62
  Vendor SPecific CDB's ......       0         80       80
  Undefined CDB's.............       0         53       53

Testing device \\.\PhysicalDrive2
Device is software WRITE PROTECTED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       0          8        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................       0         34       34
  Other CDB's ................      61          1       62
  Vendor SPecific CDB's ......       0         80       80
  Undefined CDB's.............       0         53       53

Testing device \\.\PhysicalDrive3
Device is software WRITE PROTECTED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       0          8        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................       0         34       34
  Other CDB's ................      61          1       62
  Vendor SPecific CDB's ......       0         80       80
  Undefined CDB's.............       0         53       53

Testing device \\.\PhysicalDrive4
Device is software WRITE PROTECTED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       0          8        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................       0         34       34
  Other CDB's ................      61          1       62
  Vendor SPecific CDB's ......       0         80       80
  Undefined CDB's.............       0         53       53
```

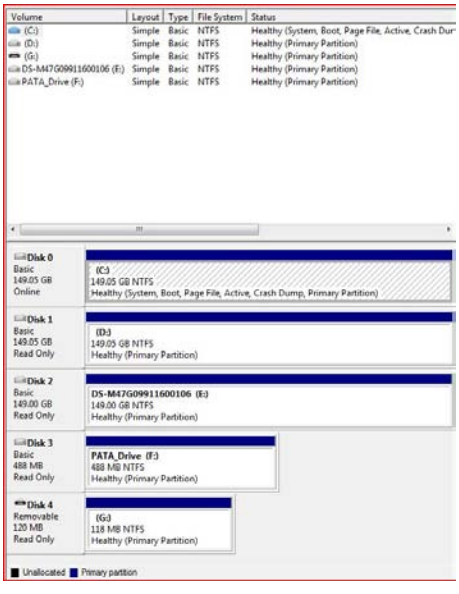
SWB-023 Test result analysis

SAFE Block Vista Version 1.0 had one unexpected result four times in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disks.

8.24 Test Case SWB-24

This case tests SAFE Block Vista V1.0's compliance with mandatory assertions SWB-MO-03 through SWB-MO-09 and optional assertion SWB-AO-07. It is run using the UNINSTALL protocol, in which SAFE Block Vista V1.0 is de-installed, the system is rebooted and all possible commands are issued to all drives. The expected result of this test is that commands from any category will not be blocked for any drive.

Figure 48: SWB-24 Drive Configuration



- System Disk
- Unblocked SATA Disk
- Unblocked RAID Array
- Unblocked PATA Drive
- Unblocked USB Drive

Table 48: SWB-24 MD5 Hash Values

Before SATA (Disk 1)	5ac4e0e42c579894e7b0e75b65ab38f1
After SATA (Disk 1)	47466d8f0581f122bf8773b7440e5c94
Before RAID (Disk 2)	91a084ba4e557e0437a7a2af1f0a7fe4
After RAID (Disk 2)	ddbfe10f47ccc7db81580a6939e3d6ab
Before PATA (Disk 3)	c56dc281258af8b5ad901567ac5a2e22
After PATA (Disk 3)	8be57899d2cf750c609e031afecf7590
Before USB (Disk 4)	9a147af6dfd03456f95e6c8c616a7ea7
After USB (Disk 4)	94df13d1443e58c311f60bfc93feb14f

Table 49: SWB-24 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE ENABLED


 ****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       8          0        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      34          0       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53

Testing device \\.\PhysicalDrive2
Device is software WRITE ENABLED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       8          0        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      34          0       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53

Testing device \\.\PhysicalDrive3
Device is software WRITE ENABLED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       8          0        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      34          0       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53

Testing device \\.\PhysicalDrive4
Device is software WRITE ENABLED

****************** TEST RESULTS SUMMARY *****************

       Test Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       8          0        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      34          0       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53
```

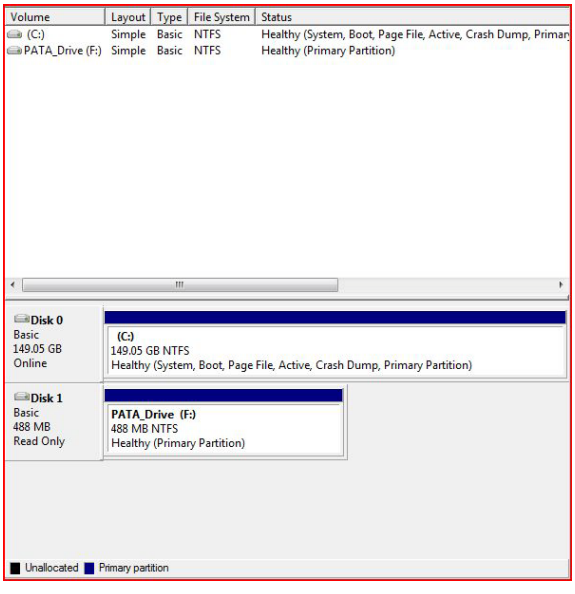
SWB-024 Test result analysis

The de-installation of SAFE Block Vista Version 1.0 performed correctly - all commands were issued and allowed on the unprotected disks.

8.25 Test Case SWB-25

This case tests SAFE Block Vista V1.0's compliance with mandatory assertion SWB-AM-10. The expected result of this test is that the IMAGE operation will fail with an I/O error and the disk hash of the test disk will be unchanged by the test. The IMAGE operation was attempted using AccessData FTK Imager 2.7.0 [4].

Figure 49: SWB-25 Drive Configuration



- System Disk
- Blocked PATA Disk

Figure 50: SWB-25 SAFE Block Vista v1.0 Configuration

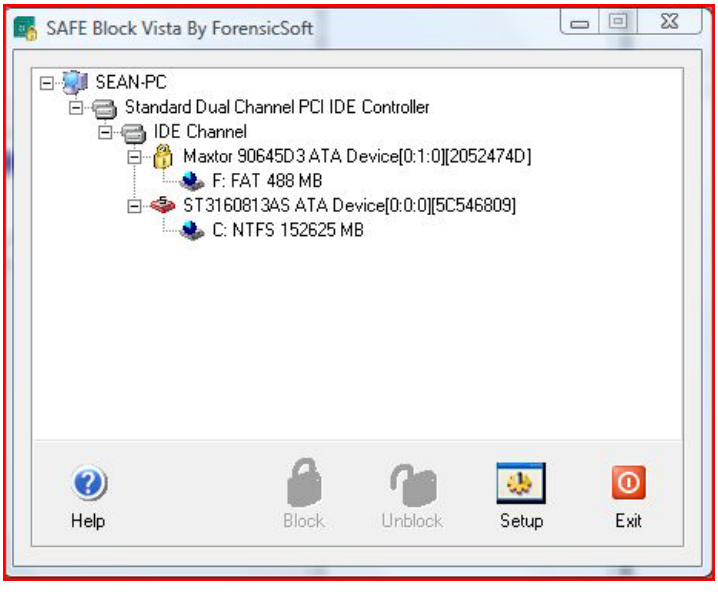
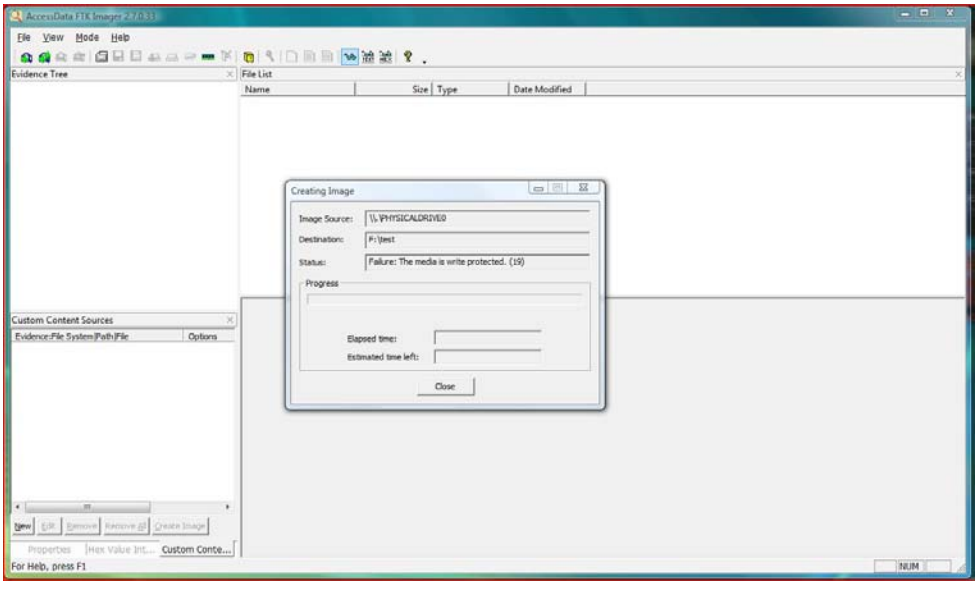


Table 50: SWB-25 MD5 Hash Values

Before PATA Disk	0fdce68c54aba26792c6a8f85888f3d6
After PATA Disk	0fdce68c54aba26792c6a8f85888f3d6

Figure 51: SWB-25 IMAGE operation result



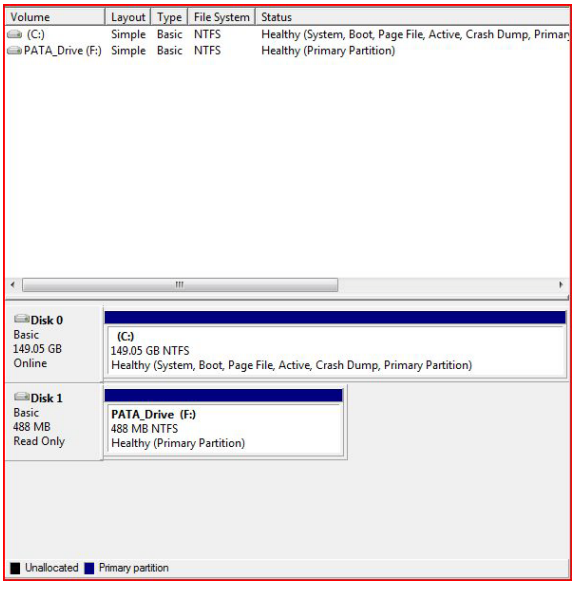
SWB-025 Test result analysis

SAFE Block Vista Version 1.0 performed correctly - the image operation failed and the hashes did not change.

8.26 Test Case SWB-26

This case tests SAFE Block Vista V1.0's compliance with mandatory assertion SWB-AM-10 and optional assertion SWB-AO-08. The expected result of this test is that the ACQUIRE operation will fail with an I/O error, and the disk hash of the test disk will be unchanged by the test. The ACQUIRE operation was attempted using Guidance Software EnCase Forensic Version 6 [7].

Figure 52: SWB-26 Drive Configuration



- System Disk
- Blocked PATA Disk

Figure 53: SWB-26 SAFE Block Vista v1.0 Configuration

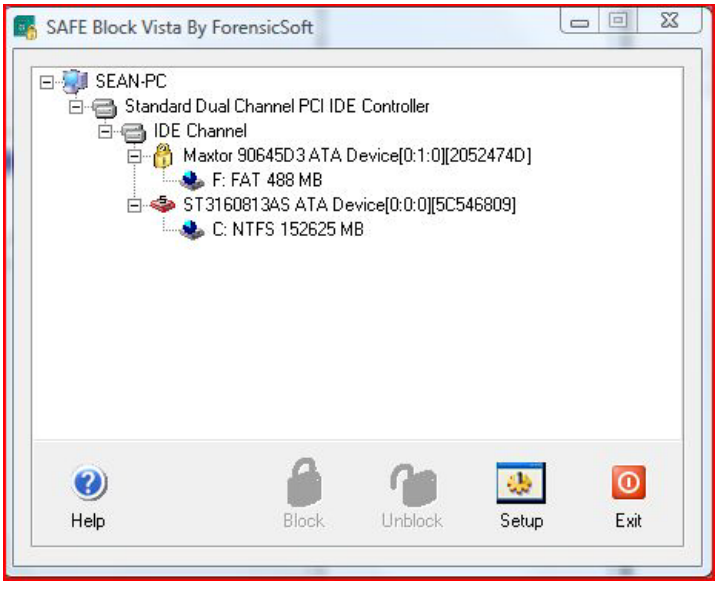
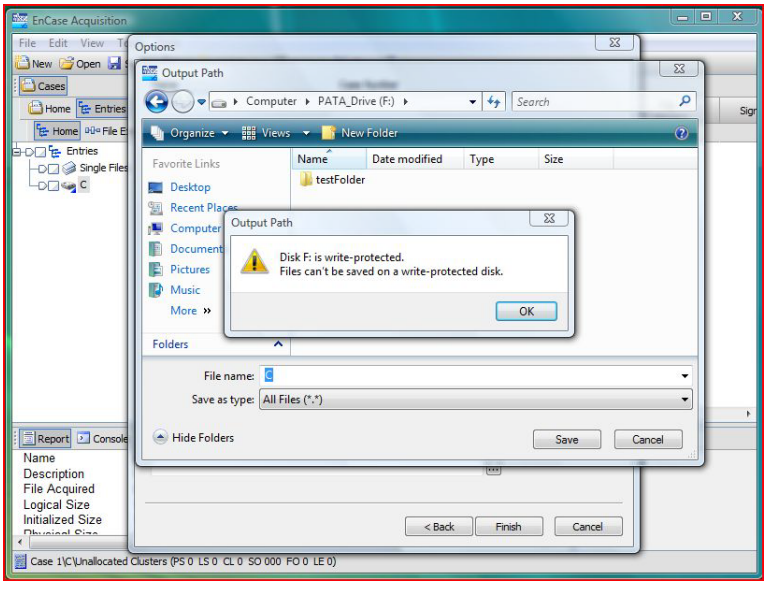


Table 51: SWB-26 MD5 Hash Values

Before PATA Disk	0fdce68c54aba26792c6a8f85888f3d6
After PATA Disk	0fdce68c54aba26792c6a8f85888f3d6

Figure 54: SWB-26 ACQUIRE operation result



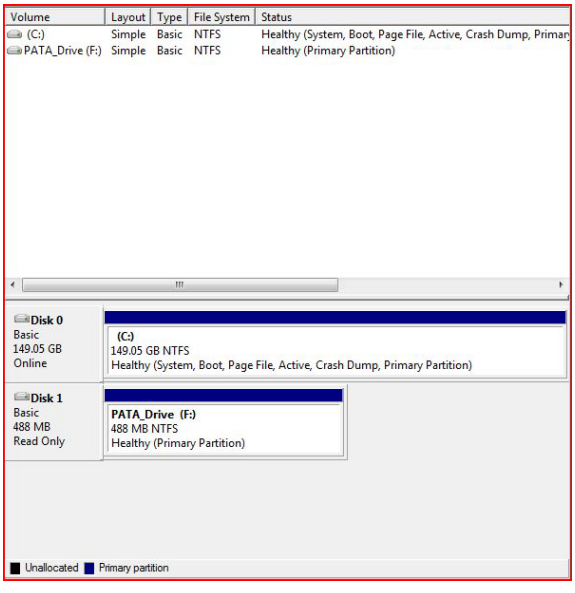
SWB-026 Test result analysis

SAFE Block Vista Version 1.0 performed correctly - the operation failed and the hashes did not change.

8.27 Test Case SWB-27

This case tests SAFE Block Vista V1.0's compliance with assertion SWB-AM-10. It is run using the typical protocol. The expected result of this test is that the COPY command will fail with an error message, and the hash value of the target disk will be unchanged after the test. The COPY operation was attempted using a standard Windows® Command Prompt.

Figure 55: SWB-27 Drive Configuration



- System Disk
- Blocked PATA Disk

Figure 56: SWB-27 SAFE Block Vista v1.0 Configuration

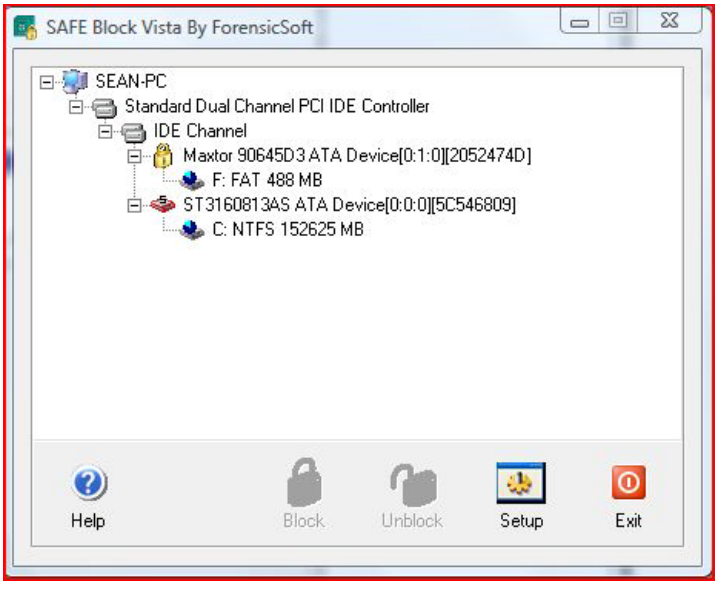


Table 52: SWB-27 MD5 Hash Values

Before PATA Disk	`0fdce68c54aba26792c6a8f85888f3d6`
After PATA Disk	`0fdce68c54aba26792c6a8f85888f3d6`

Figure 57: SWB-27 COPY operation result

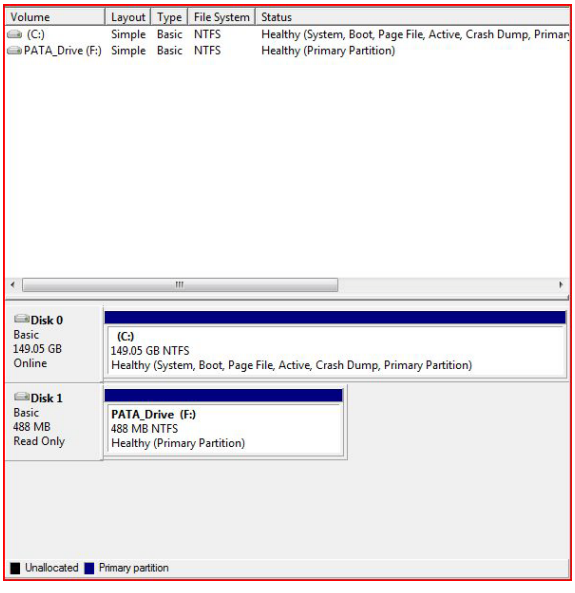
SWB-027 Test result analysis

SAFE Block Vista Version 1.0 performed correctly - the operation failed and the hashes did not change.

8.28 Test Case SWB-28

This case tests SAFE Block Vista V1.0's compliance with assertion SWB-AM-10. It is run using the typical protocol. The expected result of this test is that the DROP operation will fail with an error message and the hash value of the target disk will be unchanged after the test. The DROP operation was attempted using a Drag-and-Drop operation in Windows® Explorer.

Figure 58: SWB-28 Drive Configuration



- System Disk
- Blocked PATA Disk

Figure 59: SWB-28 SAFE Block Vista v1.0 Configuration

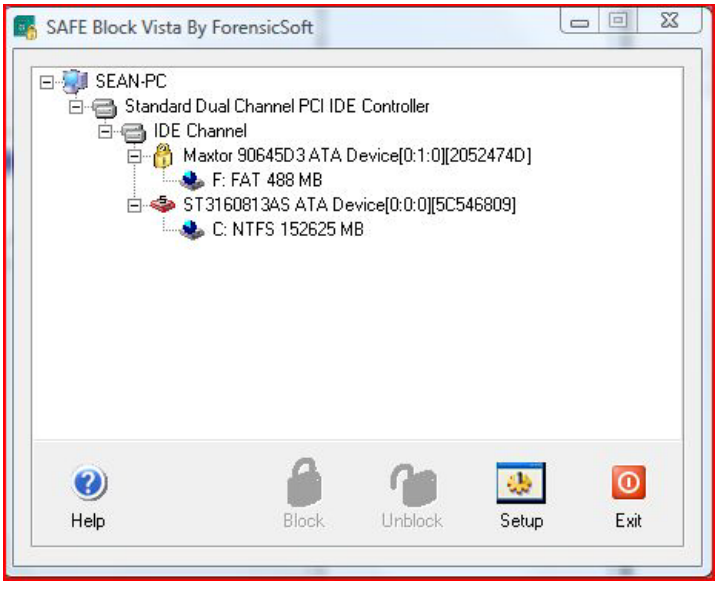
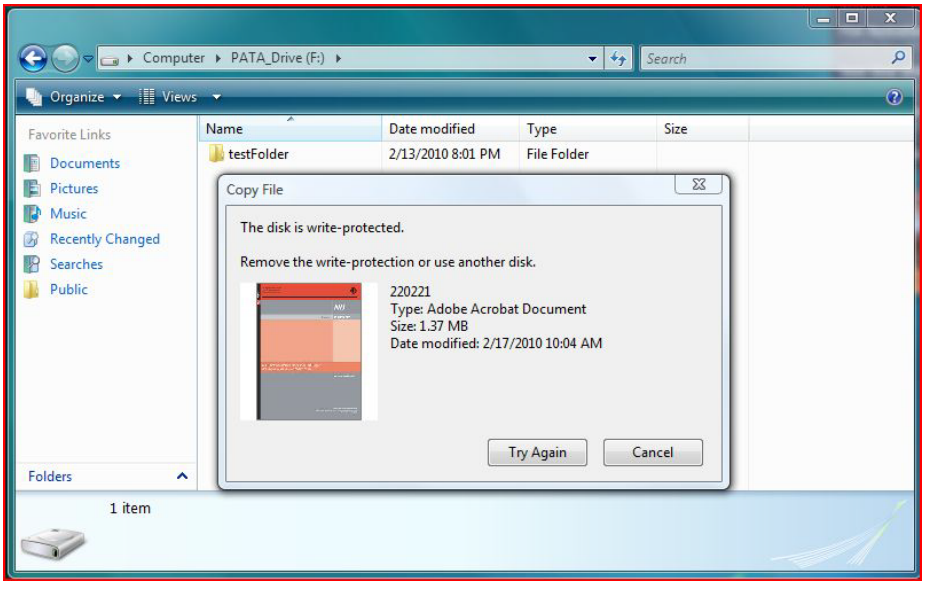


Table 53: SWB-28 MD5 Hash Values

Before PATA Disk	0fdce68c54aba26792c6a8f85888f3d6
After PATA Disk	0fdce68c54aba26792c6a8f85888f3d6

Figure 60: SWB-28 DROP operation result



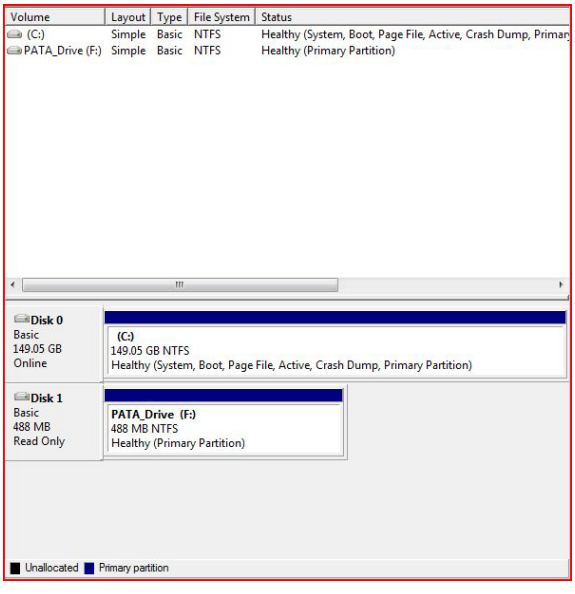
SWB-028 Test result analysis

SAFE Block Vista Version 1.0 performed correctly - the operation failed and the hashes did not change.

8.29 Test Case SWB-29

This case tests SAFE Block Vista V1.0's compliance with assertions SWB-AM-10 and SWB-AO-08. The expected result of this test is that the PASTE operation will fail with an error message, and the hash value of the target disk will be unchanged after the test. The PASTE operation was attempted using a Copy-Paste operation in Windows® Explorer.

Figure 61: SWB-29 Drive Configuration



- System Disk
- Blocked PATA Disk

Figure 62: SWB-29 SAFE Block Vista v1.0 Configuration

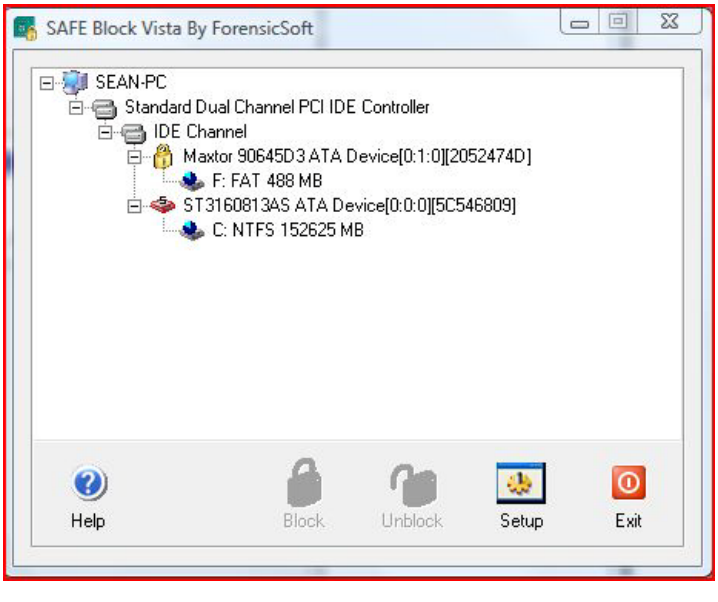
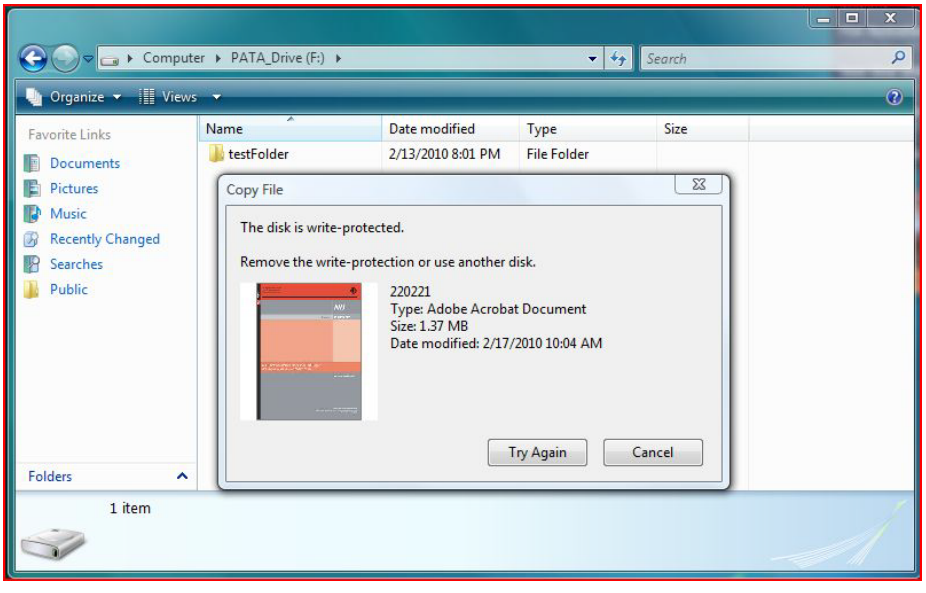


Table 54: SWB-29 MD5 Hash Values

Before PATA Disk	`0fdce68c54aba26792c6a8f85888f3d6`
After PATA Disk	`0fdce68c54aba26792c6a8f85888f3d6`

Figure 63: SWB-29 PASTE operation result



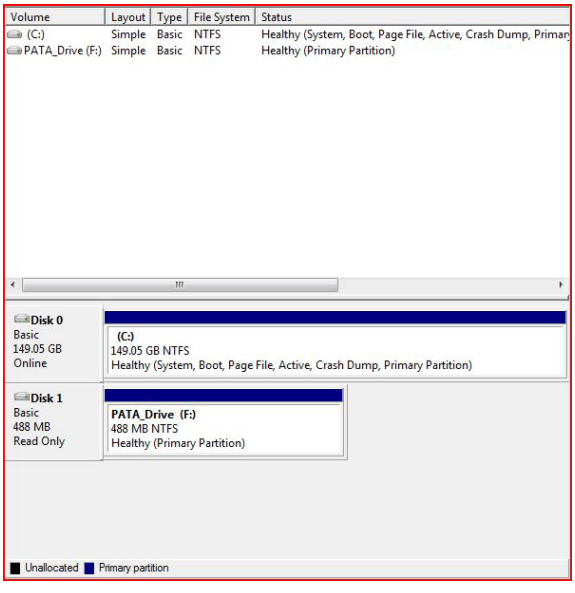
SWB-029 Test result analysis

SAFE Block Vista Version 1.0 performed correctly - the operation failed and the hashes did not change.

8.30 Test Case SWB-30

This case tests SAFE Block Vista V1.0's compliance with mandatory assertion SWB-AM-10 and optional assertion SWB-AO-08. The expected result of this test is that the SAVE AS operation will fail with an I/O error and the hash value of the test disk will be unchanged by the test. The SAVE AS operation was attempted using Windows® Notepad.

Figure 64: SWB-30 Drive Configuration



- System Disk
- Blocked PATA Disk

Figure 65: SWB-30 SAFE Block Vista v1.0 Configuration

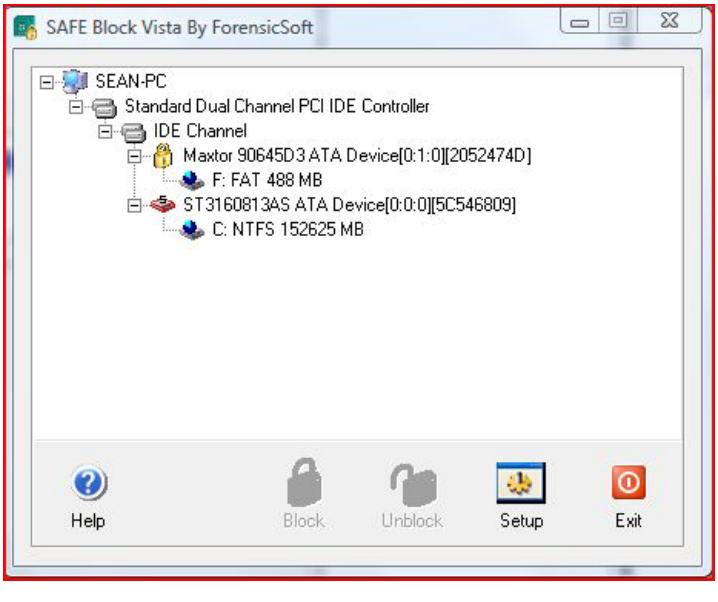
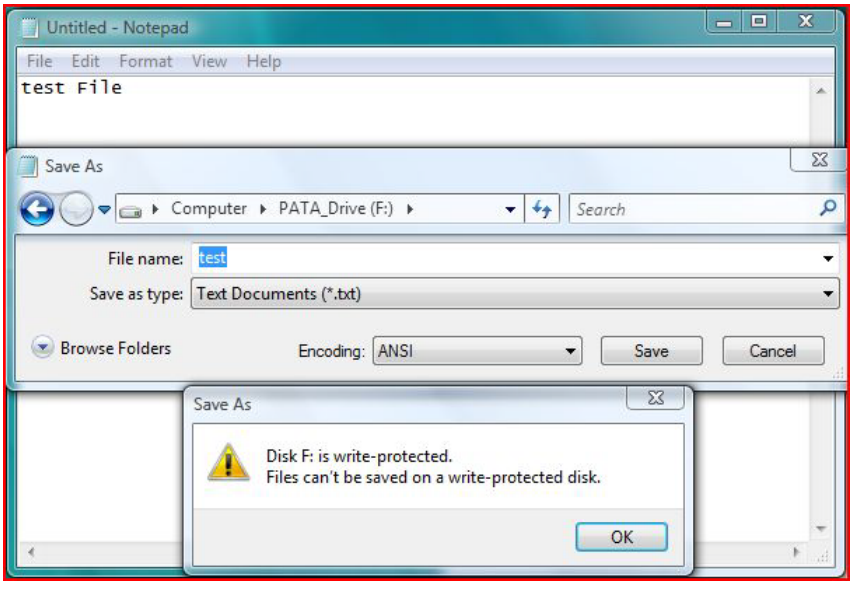


Table 55: SWB-30 MD5 Hash Values

Before PATA Disk	0fdce68c54aba26792c6a8f85888f3d6
After PATA Disk	0fdce68c54aba26792c6a8f85888f3d6

Figure 66: SWB-30 SAVE AS operation result



SWB-030 Test result analysis

SAFE Block Vista Version 1.0 performed correctly -the operation failed and the hashes did not change.

Appendix A – Sample NIST Software Write Blocker Test Suite V1.2 Complete Log File Listing

Log File for test SWB-11

```
NIST Software Write Blocker Test Suite V1.2
Sun Feb 14 13:36:03 2010

Test case:         SWB-11
Command set:       RWOVU
Number of drives:   3
Protection pattern: PUP
Test administered by:   SPA

Testing device ¥¥.¥PhysicalDrive1
Device is software WRITE PROTECTED

     IRP Function                Code   Result
-------------------------------------------------
 IRP_MJ_CREATE                  (0x00)  BLOCKED
 IRP_MJ_CREATE_NAMED_PIPE         (0x01)  ALLOWED
 IRP_MJ_CLOSE                   (0x02)  ALLOWED
 IRP_MJ_READ                    (0x03)  ALLOWED
 IRP_MJ_WRITE                   (0x04)  BLOCKED
 IRP_MJ_QUERY_INFORMATION         (0x05)  ALLOWED
 IRP_MJ_SET_INFORMATION           (0x06)  BLOCKED
 IRP_MJ_QUERY_EA                 (0x07)  ALLOWED
 IRP_MJ_SET_EA                  (0x08)  BLOCKED
 IRP_MJ_FLUSH_BUFFERS            (0x09)  BLOCKED
 IRP_MJ_QUERY_VOLUME_INFORMATION   (0x0A)  ALLOWED
 IRP_MJ_SET_VOLUME_INFORAMATION    (0x0B)  BLOCKED
 IRP_MJ_DIRECTORY_CONTROL         (0x0C)  ALLOWED
 IRP_MJ_FILE_SYSTEM_CONTROL       (0x0D)  ALLOWED
 IRP_MJ_DEVICE_CONTROL           (0x0E)  ALLOWED
 IRP_MJ_SCSI                    (0x0F)

  SCSI Operation        Opcode
  ----------------------------
  TEST_UNIT_READY       (0x00)          ALLOWED
  REWIND               (0x01)          ALLOWED
  VENDOR_SPECIFIC_CDB   (0x02)          BLOCKED
  REQUEST_SENSE         (0x03)          ALLOWED
  FORMAT_UNIT           (0x04)          BLOCKED
  READ_BLOCK_LIMITS     (0x05)          ALLOWED
  VENDOR_SPECIFIC_CDB   (0x06)          BLOCKED
  REASSIGN_BLOCKS       (0x07)          BLOCKED
  READ6                (0x08)          ALLOWED
  VENDOR_SPECIFIC_CDB   (0x09)          BLOCKED
  WRITE6               (0x0A)          BLOCKED
  SEEK6                (0x0B)          ALLOWED
  VENDOR_SPECIFIC_CDB   (0x0C)          BLOCKED
  VENDOR_SPECIFIC_CDB   (0x0D)          BLOCKED
```

```
VENDOR_SPECIFIC_CDB    (0x0E)          BLOCKED
READ_REVERSE6          (0x0F)          BLOCKED
WRITE_FILEMARKS        (0x10)          BLOCKED
SPACE                  (0x11)          BLOCKED
INQUIRY                (0x12)          ALLOWED
VERIFY6                (0x13)          ALLOWED
RECOVER_BUF_DATA       (0x14)          BLOCKED
MODE_SELECT            (0x15)          ALLOWED
RESERVE_UNIT           (0x16)          ALLOWED
RELEASE_UNIT           (0x17)          ALLOWED
COPY                   (0x18)          BLOCKED
ERASE                  (0x19)          BLOCKED
MODE_SENSE             (0x1A)          ALLOWED
START_STOP_UNIT        (0x1B)          ALLOWED
RECEIVE_DIAGNOSTIC     (0x1C)          ALLOWED
SEND_DIAGNOSTIC        (0x1D)          ALLOWED
MEDIUM_REMOVAL         (0x1E)          ALLOWED
UNDEFINED_CDB          (0x1F)          BLOCKED
VENDOR_SPECIFIC_CDB    (0x20)          BLOCKED
VENDOR_SPECIFIC_CDB    (0x21)          BLOCKED
VENDOR_SPECIFIC_CDB    (0x22)          BLOCKED
VENDOR_SPECIFIC_CDB    (0x23)          BLOCKED
SET_WINDOW             (0x24)          ALLOWED
READ_CAPACITY          (0x25)          ALLOWED
VENDOR_SPECIFIC_CDB    (0x26)          BLOCKED
VENDOR_SPECIFIC_CDB    (0x27)          BLOCKED
READ10                 (0x28)          ALLOWED
READ_GENERATION        (0x29)          ALLOWED
WRITE10                (0x2A)          BLOCKED
SEEK10                 (0x2B)          ALLOWED
ERASE10                (0x2C)          BLOCKED
VENDOR_SPECIFIC_CDB    (0x2D)          BLOCKED
WRITE_AND_VERIFY10     (0x2E)          BLOCKED
VERIFY                 (0x2F)          ALLOWED
SEARCH_DATA_HIGH       (0x30)          ALLOWED
SEARCH_DATA_EQUAL      (0x31)          ALLOWED
SEARCH_DATA_LOW        (0x32)          ALLOWED
SET_LIMITS             (0x33)          ALLOWED
READ_POSITION          (0x34)          ALLOWED
SYNCHRONIZE_CACHE      (0x35)          BLOCKED
LOCK_UNLOCK_CACHE      (0x36)          ALLOWED
READ_DEFECT_DATA       (0x37)          ALLOWED
MEDIUM_SCAN            (0x38)          ALLOWED
COMPARE                (0x39)          ALLOWED
COPY_COMPARE           (0x3A)          BLOCKED
WRITE_DATA_BUFF        (0x3B)          BLOCKED
READ_DATA_BUFF         (0x3C)          ALLOWED
UNDEFINED_CDB          (0x3D)          BLOCKED
READ_LONG10            (0x3E)          ALLOWED
WRITE_LONG10           (0x3F)          BLOCKED
CHANGE_DEFINITION      (0x40)          ALLOWED
WRITE_SAME10           (0x41)          BLOCKED
READ_SUB_CHANNEL       (0x42)          ALLOWED
READ_TOC               (0x43)          ALLOWED
```

```
READ_HEADER           (0x44)          ALLOWED
PLAY_AUDIO            (0x45)          ALLOWED
GET_CONFIGURATION     (0x46)          ALLOWED
PLAY_AUDIO_MSF        (0x47)          ALLOWED
PLAY_TRACK_INDEX      (0x48)          ALLOWED
PLAY_TRACK_RELATIVE   (0x49)          ALLOWED
GET_EVENT_STATUS      (0x4A)          ALLOWED
PAUSE_RESUME          (0x4B)          ALLOWED
LOG_SELECT            (0x4C)          ALLOWED
LOG_SENSE             (0x4D)          ALLOWED
STOP_PLAY_SCAN        (0x4E)          ALLOWED
UNDEFINED_CDB         (0x4F)          BLOCKED
XDWRITE10             (0x50)          BLOCKED
XPWRITE10             (0x51)          BLOCKED
XDREAD10              (0x52)          ALLOWED
XDWRITucRead10        (0x53)          BLOCKED
SEND_OPC_INFORMATION  (0x54)          ALLOWED
MODE_SELECT10         (0x55)          ALLOWED
RESERVE_UNIT10        (0x56)          ALLOWED
RELEASE_UNIT10        (0x57)          ALLOWED
REPAIR_TRACK          (0x58)          BLOCKED
UNDEFINED_CDB         (0x59)          BLOCKED
MODE_SENSE10          (0x5A)          ALLOWED
CLOSE_TRACK_SESSION   (0x5B)          BLOCKED
READ_BUFFER_CAPACITY  (0x5C)          ALLOWED
SEND_CUE_SHEET        (0x5D)          BLOCKED
PERSISTENT_RESERVE_IN  (0x5E)         ALLOWED
PERSISTENT_RESERVE_OUT (0x5F)         ALLOWED
UNDEFINED_CDB         (0x60)          BLOCKED
UNDEFINED_CDB         (0x61)          BLOCKED
UNDEFINED_CDB         (0x62)          BLOCKED
UNDEFINED_CDB         (0x63)          BLOCKED
UNDEFINED_CDB         (0x64)          BLOCKED
UNDEFINED_CDB         (0x65)          BLOCKED
UNDEFINED_CDB         (0x66)          BLOCKED
UNDEFINED_CDB         (0x67)          BLOCKED
UNDEFINED_CDB         (0x68)          BLOCKED
UNDEFINED_CDB         (0x69)          BLOCKED
UNDEFINED_CDB         (0x6A)          BLOCKED
UNDEFINED_CDB         (0x6B)          BLOCKED
UNDEFINED_CDB         (0x6C)          BLOCKED
UNDEFINED_CDB         (0x6D)          BLOCKED
UNDEFINED_CDB         (0x6E)          BLOCKED
UNDEFINED_CDB         (0x6F)          BLOCKED
UNDEFINED_CDB         (0x70)          BLOCKED
UNDEFINED_CDB         (0x71)          BLOCKED
UNDEFINED_CDB         (0x72)          BLOCKED
UNDEFINED_CDB         (0x73)          BLOCKED
UNDEFINED_CDB         (0x74)          BLOCKED
UNDEFINED_CDB         (0x75)          BLOCKED
UNDEFINED_CDB         (0x76)          BLOCKED
UNDEFINED_CDB         (0x77)          BLOCKED
UNDEFINED_CDB         (0x78)          BLOCKED
UNDEFINED_CDB         (0x79)          BLOCKED
```

```
UNDEFINED_CDB          (0x7A)          BLOCKED
UNDEFINED_CDB          (0x7B)          BLOCKED
UNDEFINED_CDB          (0x7C)          BLOCKED
UNDEFINED_CDB          (0x7D)          BLOCKED
UNDEFINED_CDB          (0x7E)          BLOCKED
UNDEFINED_CDB          (0x7F)          BLOCKED
XDWRITE_EXTENDED       (0x80)          BLOCKED
REBUILD               (0x81)          BLOCKED
REGENERATE            (0x82)          BLOCKED
EXTENDED_COPY          (0x83)          BLOCKED
RECEIVE_COPY_RESULTS   (0x84)          ALLOWED
ATA_PASSTHROUGH16      (0x85)          BLOCKED
ACCESS_CONTROL_IN      (0x86)          ALLOWED
ACCESS_CONTROL_OUT     (0x87)          ALLOWED
READ16                (0x88)          ALLOWED
UNDEFINED_CDB          (0x89)          BLOCKED
WRITE16               (0x8A)          BLOCKED
UNDEFINED_CDB          (0x8B)          BLOCKED
READ_ATTRIBUTE         (0x8C)          ALLOWED
WRITE_ATTRIBUTE        (0x8D)          BLOCKED
WRITE_AND_VERIFY16     (0x8E)          BLOCKED
VERIFY16              (0x8F)          ALLOWED
PRE-FETCH16            (0x90)          ALLOWED
SYNCHRONIZE_CACHE16    (0x91)          BLOCKED
LOCK-UNLOCK CACHE      (0x92)          ALLOWED
WRITE_SAME16           (0x93)          BLOCKED
UNDEFINED_CDB          (0x94)          BLOCKED
UNDEFINED_CDB          (0x95)          BLOCKED
UNDEFINED_CDB          (0x96)          BLOCKED
UNDEFINED_CDB          (0x97)          BLOCKED
UNDEFINED_CDB          (0x98)          BLOCKED
UNDEFINED_CDB          (0x99)          BLOCKED
UNDEFINED_CDB          (0x9A)          BLOCKED
UNDEFINED_CDB          (0x9B)          BLOCKED
UNDEFINED_CDB          (0x9C)          BLOCKED
UNDEFINED_CDB          (0x9D)          BLOCKED
UNDEFINED_CDB          (0x9E)          BLOCKED
UNDEFINED_CDB          (0x9F)          BLOCKED
REPORT_LUNS            (0xA0)          ALLOWED
ATA_PASSTHROUGH12      (0xA1)          BLOCKED
SEND_EVENT            (0xA2)          BLOCKED
SEND_KEY              (0xA3)          ALLOWED
REPORT_KEY            (0xA4)          ALLOWED
MOVE_MEDIUM           (0xA5)          ALLOWED
LOAD_UNLOAD_SLOT       (0xA6)          ALLOWED
SET_READ_AHEAD         (0xA7)          ALLOWED
READ12                (0xA8)          ALLOWED
UNDEFINED_CDB          (0xA9)          BLOCKED
WRITE12               (0xAA)          BLOCKED
UNDEFINED_CDB          (0xAB)          BLOCKED
ERASE12               (0xAC)          BLOCKED
READ_DVD_STRUCTURE     (0xAD)          ALLOWED
WRITE_AND_VERIFY12     (0xAE)          BLOCKED
VERIFY12              (0xAF)          ALLOWED
```

```
SEARCH_DATA_HIGH12     (0xB0)          ALLOWED
SEARCH_DATA_EQUAL12    (0xB1)          ALLOWED
SEARCH_DATA_LOW12      (0xB2)          ALLOWED
SET_LIMITS12           (0xB3)          ALLOWED
READ_ELEMENT_STATUS_AT (0xB4)          ALLOWED
REQUEST_VOL_ELEMENT    (0xB5)          BLOCKED
SEND_VOLUME_TAG        (0xB6)          ALLOWED
READ_DEFECT_DATA12     (0xB7)          ALLOWED
READ_ELEMENT_STATUS    (0xB8)          ALLOWED
READ_CD_MSF12          (0xB9)          ALLOWED
SCAN12                 (0xBA)          ALLOWED
SET_CDROM_SPEED12      (0xBB)          ALLOWED
PLAY_CD12              (0xBC)          ALLOWED
MECHANISM_STATUS       (0xBD)          ALLOWED
READ_CD12              (0xBE)          ALLOWED
SEND_DVD_STRUCTURE     (0xBF)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xC0)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xC1)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xC2)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xC3)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xC4)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xC5)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xC6)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xC7)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xC8)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xC9)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xCA)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xCB)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xCC)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xCD)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xCE)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xCF)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xD0)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xD1)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xD2)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xD3)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xD4)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xD5)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xD6)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xD7)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xD8)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xD9)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xDA)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xDB)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xDC)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xDD)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xDE)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xDF)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xE0)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xE1)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xE2)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xE3)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xE4)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xE5)          BLOCKED
```

```
 VENDOR_SPECIFIC_CDB   (0xE6)          BLOCKED
 VENDOR_SPECIFIC_CDB   (0xE7)          BLOCKED
 VENDOR_SPECIFIC_CDB   (0xE8)          BLOCKED
 VENDOR_SPECIFIC_CDB   (0xE9)          BLOCKED
 VENDOR_SPECIFIC_CDB   (0xEA)          BLOCKED
 VENDOR_SPECIFIC_CDB   (0xEB)          BLOCKED
 VENDOR_SPECIFIC_CDB   (0xEC)          BLOCKED
 VENDOR_SPECIFIC_CDB   (0xED)          BLOCKED
 VENDOR_SPECIFIC_CDB   (0xEE)          BLOCKED
 VENDOR_SPECIFIC_CDB   (0xEF)          BLOCKED
 VENDOR_SPECIFIC_CDB   (0xF0)          BLOCKED
 VENDOR_SPECIFIC_CDB   (0xF1)          BLOCKED
 VENDOR_SPECIFIC_CDB   (0xF2)          BLOCKED
 VENDOR_SPECIFIC_CDB   (0xF3)          BLOCKED
 VENDOR_SPECIFIC_CDB   (0xF4)          BLOCKED
 VENDOR_SPECIFIC_CDB   (0xF5)          BLOCKED
 VENDOR_SPECIFIC_CDB   (0xF6)          BLOCKED
 VENDOR_SPECIFIC_CDB   (0xF7)          BLOCKED
 VENDOR_SPECIFIC_CDB   (0xF8)          BLOCKED
 VENDOR_SPECIFIC_CDB   (0xF9)          BLOCKED
 VENDOR_SPECIFIC_CDB   (0xFA)          BLOCKED
 VENDOR_SPECIFIC_CDB   (0xFB)          BLOCKED
 VENDOR_SPECIFIC_CDB   (0xFC)          BLOCKED
 VENDOR_SPECIFIC_CDB   (0xFD)          BLOCKED
 VENDOR_SPECIFIC_CDB   (0xFE)          BLOCKED
 VENDOR_SPECIFIC_CDB   (0xFF)          BLOCKED

IRP_MJ_SHUTDOWN                (0x10)  ALLOWED
IRP_MJ_LOCK_CONTROL             (0x11)  ALLOWED
IRP_MJ_CLEANUP                 (0x12)  ALLOWED
IRP_MJ_CREATE_MAILSLOT          (0x13)  ALLOWED
IRP_MJ_QUERY_SECURITY           (0x14)  ALLOWED
IRP_MJ_SET_SECURITY             (0x15)  BLOCKED
IRP_MJ_POWER                   (0x16)  ALLOWED
IRP_MJ_SYSTEM_CONTROL           (0x17)  ALLOWED
IRP_MJ_DEVICE_CHANGE            (0x18)  ALLOWED
IRP_MJ_QUERY_QUOTA              (0x19)  ALLOWED
IRP_MJ_SET_QUOTA                (0x1A)  BLOCKED
IRP_MJ_PNP                     (0x1B)  ALLOWED

****************** TEST RESULTS SUMMARY *****************

     Test Category         Allowed   Blocked   Total
-----------------------------------------------------------
 Read IRP's .................     4         0       4
 Write IRP's ................     0         8       8
 Other IRP's ................    15         0      15

 Read CDB's  ................    27         0      27
 Write CDB's ................     0        34      34
 Other CDB's ................    61         1      62
 Vendor Specific CDB's ......     0        80      80
 Undefined CDB's.............     0        53      53
```

```
Testing device ¥¥.¥PhysicalDrive2
Device is software WRITE ENABLED

     IRP Function                Code   Result
-------------------------------------------------
 IRP_MJ_CREATE                  (0x00)  ALLOWED
 IRP_MJ_CREATE_NAMED_PIPE        (0x01)  ALLOWED
 IRP_MJ_CLOSE                   (0x02)  ALLOWED
 IRP_MJ_READ                    (0x03)  ALLOWED
 IRP_MJ_WRITE                   (0x04)  ALLOWED
 IRP_MJ_QUERY_INFORMATION        (0x05)  ALLOWED
 IRP_MJ_SET_INFORMATION          (0x06)  ALLOWED
 IRP_MJ_QUERY_EA                (0x07)  ALLOWED
 IRP_MJ_SET_EA                  (0x08)  ALLOWED
 IRP_MJ_FLUSH_BUFFERS            (0x09)  ALLOWED
 IRP_MJ_QUERY_VOLUME_INFORMATION   (0x0A)  ALLOWED
 IRP_MJ_SET_VOLUME_INFORAMATION    (0x0B)  ALLOWED
 IRP_MJ_DIRECTORY_CONTROL         (0x0C)  ALLOWED
 IRP_MJ_FILE_SYSTEM_CONTROL       (0x0D)  ALLOWED
 IRP_MJ_DEVICE_CONTROL           (0x0E)  ALLOWED
 IRP_MJ_SCSI                    (0x0F)

  SCSI Operation        Opcode
  ------------------------------
  TEST_UNIT_READY       (0x00)          ALLOWED
  REWIND                (0x01)          ALLOWED
  VENDOR_SPECIFIC_CDB    (0x02)          ALLOWED
  REQUEST_SENSE         (0x03)          ALLOWED
  FORMAT_UNIT           (0x04)          ALLOWED
  READ_BLOCK_LIMITS      (0x05)          ALLOWED
  VENDOR_SPECIFIC_CDB    (0x06)          ALLOWED
  REASSIGN_BLOCKS       (0x07)          ALLOWED
  READ6                 (0x08)          ALLOWED
  VENDOR_SPECIFIC_CDB    (0x09)          ALLOWED
  WRITE6                (0x0A)          ALLOWED
  SEEK6                 (0x0B)          ALLOWED
  VENDOR_SPECIFIC_CDB    (0x0C)          ALLOWED
  VENDOR_SPECIFIC_CDB    (0x0D)          ALLOWED
  VENDOR_SPECIFIC_CDB    (0x0E)          ALLOWED
  READ_REVERSE6         (0x0F)          ALLOWED
  WRITE_FILEMARKS       (0x10)          ALLOWED
  SPACE                 (0x11)          ALLOWED
  INQUIRY               (0x12)          ALLOWED
  VERIFY6               (0x13)          ALLOWED
  RECOVER_BUF_DATA      (0x14)          ALLOWED
  MODE_SELECT           (0x15)          ALLOWED
  RESERVE_UNIT          (0x16)          ALLOWED
  RELEASE_UNIT          (0x17)          ALLOWED
  COPY                  (0x18)          ALLOWED
  ERASE                 (0x19)          ALLOWED
  MODE_SENSE            (0x1A)          ALLOWED
  START_STOP_UNIT       (0x1B)          ALLOWED
  RECEIVE_DIAGNOSTIC    (0x1C)          ALLOWED
  SEND_DIAGNOSTIC       (0x1D)          ALLOWED
```

```
MEDIUM_REMOVAL        (0x1E)          ALLOWED
UNDEFINED_CDB         (0x1F)          ALLOWED
VENDOR_SPECIFIC_CDB    (0x20)          ALLOWED
VENDOR_SPECIFIC_CDB    (0x21)          ALLOWED
VENDOR_SPECIFIC_CDB    (0x22)          ALLOWED
VENDOR_SPECIFIC_CDB    (0x23)          ALLOWED
SET_WINDOW            (0x24)          ALLOWED
READ_CAPACITY         (0x25)          ALLOWED
VENDOR_SPECIFIC_CDB    (0x26)          ALLOWED
VENDOR_SPECIFIC_CDB    (0x27)          ALLOWED
READ10                (0x28)          ALLOWED
READ_GENERATION        (0x29)          ALLOWED
WRITE10               (0x2A)          ALLOWED
SEEK10                (0x2B)          ALLOWED
ERASE10               (0x2C)          ALLOWED
VENDOR_SPECIFIC_CDB    (0x2D)          ALLOWED
WRITE_AND_VERIFY10     (0x2E)          ALLOWED
VERIFY                (0x2F)          ALLOWED
SEARCH_DATA_HIGH       (0x30)          ALLOWED
SEARCH_DATA_EQUAL      (0x31)          ALLOWED
SEARCH_DATA_LOW        (0x32)          ALLOWED
SET_LIMITS            (0x33)          ALLOWED
READ_POSITION         (0x34)          ALLOWED
SYNCHRONIZE_CACHE      (0x35)          ALLOWED
LOCK_UNLOCK_CACHE      (0x36)          ALLOWED
READ_DEFECT_DATA       (0x37)          ALLOWED
MEDIUM_SCAN           (0x38)          ALLOWED
COMPARE               (0x39)          ALLOWED
COPY_COMPARE          (0x3A)          ALLOWED
WRITE_DATA_BUFF        (0x3B)          ALLOWED
READ_DATA_BUFF         (0x3C)          ALLOWED
UNDEFINED_CDB         (0x3D)          ALLOWED
READ_LONG10           (0x3E)          ALLOWED
WRITE_LONG10          (0x3F)          ALLOWED
CHANGE_DEFINITION      (0x40)          ALLOWED
WRITE_SAME10          (0x41)          ALLOWED
READ_SUB_CHANNEL       (0x42)          ALLOWED
READ_TOC              (0x43)          ALLOWED
READ_HEADER           (0x44)          ALLOWED
PLAY_AUDIO            (0x45)          ALLOWED
GET_CONFIGURATION      (0x46)          ALLOWED
PLAY_AUDIO_MSF         (0x47)          ALLOWED
PLAY_TRACK_INDEX       (0x48)          ALLOWED
PLAY_TRACK_RELATIVE    (0x49)          ALLOWED
GET_EVENT_STATUS       (0x4A)          ALLOWED
PAUSE_RESUME          (0x4B)          ALLOWED
LOG_SELECT            (0x4C)          ALLOWED
LOG_SENSE             (0x4D)          ALLOWED
STOP_PLAY_SCAN         (0x4E)          ALLOWED
UNDEFINED_CDB         (0x4F)          ALLOWED
XDWRITE10             (0x50)          ALLOWED
XPWRITE10             (0x51)          ALLOWED
XDREAD10              (0x52)          ALLOWED
XDWRITucRead10         (0x53)          ALLOWED
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```
SEND_OPC_INFORMATION   (0x54)          ALLOWED
MODE_SELECT10         (0x55)          ALLOWED
RESERVE_UNIT10        (0x56)          ALLOWED
RELEASE_UNIT10        (0x57)          ALLOWED
REPAIR_TRACK          (0x58)          ALLOWED
UNDEFINED_CDB         (0x59)          ALLOWED
MODE_SENSE10          (0x5A)          ALLOWED
CLOSE_TRACK_SESSION    (0x5B)          ALLOWED
READ_BUFFER_CAPACITY   (0x5C)          ALLOWED
SEND_CUE_SHEET        (0x5D)          ALLOWED
PERSISTENT_RESERVE_IN  (0x5E)          ALLOWED
PERSISTENT_RESERVE_OUT (0x5F)          ALLOWED
UNDEFINED_CDB         (0x60)          ALLOWED
UNDEFINED_CDB         (0x61)          ALLOWED
UNDEFINED_CDB         (0x62)          ALLOWED
UNDEFINED_CDB         (0x63)          ALLOWED
UNDEFINED_CDB         (0x64)          ALLOWED
UNDEFINED_CDB         (0x65)          ALLOWED
UNDEFINED_CDB         (0x66)          ALLOWED
UNDEFINED_CDB         (0x67)          ALLOWED
UNDEFINED_CDB         (0x68)          ALLOWED
UNDEFINED_CDB         (0x69)          ALLOWED
UNDEFINED_CDB         (0x6A)          ALLOWED
UNDEFINED_CDB         (0x6B)          ALLOWED
UNDEFINED_CDB         (0x6C)          ALLOWED
UNDEFINED_CDB         (0x6D)          ALLOWED
UNDEFINED_CDB         (0x6E)          ALLOWED
UNDEFINED_CDB         (0x6F)          ALLOWED
UNDEFINED_CDB         (0x70)          ALLOWED
UNDEFINED_CDB         (0x71)          ALLOWED
UNDEFINED_CDB         (0x72)          ALLOWED
UNDEFINED_CDB         (0x73)          ALLOWED
UNDEFINED_CDB         (0x74)          ALLOWED
UNDEFINED_CDB         (0x75)          ALLOWED
UNDEFINED_CDB         (0x76)          ALLOWED
UNDEFINED_CDB         (0x77)          ALLOWED
UNDEFINED_CDB         (0x78)          ALLOWED
UNDEFINED_CDB         (0x79)          ALLOWED
UNDEFINED_CDB         (0x7A)          ALLOWED
UNDEFINED_CDB         (0x7B)          ALLOWED
UNDEFINED_CDB         (0x7C)          ALLOWED
UNDEFINED_CDB         (0x7D)          ALLOWED
UNDEFINED_CDB         (0x7E)          ALLOWED
UNDEFINED_CDB         (0x7F)          ALLOWED
XDWRITE_EXTENDED      (0x80)          ALLOWED
REBUILD              (0x81)          ALLOWED
REGENERATE           (0x82)          ALLOWED
EXTENDED_COPY         (0x83)          ALLOWED
RECEIVE_COPY_RESULTS   (0x84)          ALLOWED
ATA_PASSTHROUGH16     (0x85)          ALLOWED
ACCESS_CONTROL_IN     (0x86)          ALLOWED
ACCESS_CONTROL_OUT    (0x87)          ALLOWED
READ16               (0x88)          ALLOWED
UNDEFINED_CDB         (0x89)          ALLOWED
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WRITE16                 (0x8A)          ALLOWED
UNDEFINED_CDB           (0x8B)          ALLOWED
READ_ATTRIBUTE          (0x8C)          ALLOWED
WRITE_ATTRIBUTE         (0x8D)          ALLOWED
WRITE_AND_VERIFY16      (0x8E)          ALLOWED
VERIFY16                (0x8F)          ALLOWED
PRE-FETCH16             (0x90)          ALLOWED
SYNCHRONIZE_CACHE16     (0x91)          ALLOWED
LOCK-UNLOCK CACHE       (0x92)          ALLOWED
WRITE_SAME16            (0x93)          ALLOWED
UNDEFINED_CDB           (0x94)          ALLOWED
UNDEFINED_CDB           (0x95)          ALLOWED
UNDEFINED_CDB           (0x96)          ALLOWED
UNDEFINED_CDB           (0x97)          ALLOWED
UNDEFINED_CDB           (0x98)          ALLOWED
UNDEFINED_CDB           (0x99)          ALLOWED
UNDEFINED_CDB           (0x9A)          ALLOWED
UNDEFINED_CDB           (0x9B)          ALLOWED
UNDEFINED_CDB           (0x9C)          ALLOWED
UNDEFINED_CDB           (0x9D)          ALLOWED
UNDEFINED_CDB           (0x9E)          ALLOWED
UNDEFINED_CDB           (0x9F)          ALLOWED
REPORT_LUNS             (0xA0)          ALLOWED
ATA_PASSTHROUGH12       (0xA1)          ALLOWED
SEND_EVENT              (0xA2)          ALLOWED
SEND_KEY                (0xA3)          ALLOWED
REPORT_KEY              (0xA4)          ALLOWED
MOVE_MEDIUM             (0xA5)          ALLOWED
LOAD_UNLOAD_SLOT        (0xA6)          ALLOWED
SET_READ_AHEAD          (0xA7)          ALLOWED
READ12                  (0xA8)          ALLOWED
UNDEFINED_CDB           (0xA9)          ALLOWED
WRITE12                 (0xAA)          ALLOWED
UNDEFINED_CDB           (0xAB)          ALLOWED
ERASE12                 (0xAC)          ALLOWED
READ_DVD_STRUCTURE      (0xAD)          ALLOWED
WRITE_AND_VERIFY12      (0xAE)          ALLOWED
VERIFY12                (0xAF)          ALLOWED
SEARCH_DATA_HIGH12      (0xB0)          ALLOWED
SEARCH_DATA_EQUAL12     (0xB1)          ALLOWED
SEARCH_DATA_LOW12       (0xB2)          ALLOWED
SET_LIMITS12            (0xB3)          ALLOWED
READ_ELEMENT_STATUS_AT  (0xB4)          ALLOWED
REQUEST_VOL_ELEMENT     (0xB5)          ALLOWED
SEND_VOLUME_TAG         (0xB6)          ALLOWED
READ_DEFECT_DATA12      (0xB7)          ALLOWED
READ_ELEMENT_STATUS     (0xB8)          ALLOWED
READ_CD_MSF12           (0xB9)          ALLOWED
SCAN12                  (0xBA)          ALLOWED
SET_CDROM_SPEED12       (0xBB)          ALLOWED
PLAY_CD12               (0xBC)          ALLOWED
MECHANISM_STATUS        (0xBD)          ALLOWED
READ_CD12               (0xBE)          ALLOWED
SEND_DVD_STRUCTURE      (0xBF)          ALLOWED
```

```
VENDOR_SPECIFIC_CDB    (0xC0)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xC1)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xC2)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xC3)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xC4)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xC5)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xC6)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xC7)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xC8)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xC9)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xCA)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xCB)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xCC)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xCD)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xCE)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xCF)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xD0)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xD1)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xD2)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xD3)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xD4)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xD5)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xD6)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xD7)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xD8)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xD9)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xDA)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xDB)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xDC)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xDD)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xDE)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xDF)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xE0)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xE1)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xE2)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xE3)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xE4)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xE5)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xE6)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xE7)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xE8)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xE9)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xEA)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xEB)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xEC)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xED)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xEE)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xEF)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xF0)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xF1)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xF2)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xF3)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xF4)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xF5)          ALLOWED
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```
  VENDOR_SPECIFIC_CDB    (0xF6)          ALLOWED
  VENDOR_SPECIFIC_CDB    (0xF7)          ALLOWED
  VENDOR_SPECIFIC_CDB    (0xF8)          ALLOWED
  VENDOR_SPECIFIC_CDB    (0xF9)          ALLOWED
  VENDOR_SPECIFIC_CDB    (0xFA)          ALLOWED
  VENDOR_SPECIFIC_CDB    (0xFB)          ALLOWED
  VENDOR_SPECIFIC_CDB    (0xFC)          ALLOWED
  VENDOR_SPECIFIC_CDB    (0xFD)          ALLOWED
  VENDOR_SPECIFIC_CDB    (0xFE)          ALLOWED
  VENDOR_SPECIFIC_CDB    (0xFF)          ALLOWED

 IRP_MJ_SHUTDOWN                (0x10)  ALLOWED
 IRP_MJ_LOCK_CONTROL             (0x11)  ALLOWED
 IRP_MJ_CLEANUP                 (0x12)  ALLOWED
 IRP_MJ_CREATE_MAILSLOT          (0x13)  ALLOWED
 IRP_MJ_QUERY_SECURITY           (0x14)  ALLOWED
 IRP_MJ_SET_SECURITY             (0x15)  ALLOWED
 IRP_MJ_POWER                   (0x16)  ALLOWED
 IRP_MJ_SYSTEM_CONTROL           (0x17)  ALLOWED
 IRP_MJ_DEVICE_CHANGE            (0x18)  ALLOWED
 IRP_MJ_QUERY_QUOTA              (0x19)  ALLOWED
 IRP_MJ_SET_QUOTA                (0x1A)  ALLOWED
 IRP_MJ_PNP                     (0x1B)  ALLOWED

 ****************** TEST RESULTS SUMMARY *****************

      Test Category          Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................      4         0       4
  Write IRP's ...............       8         0       8
  Other IRP's .................     15         0      15

  Read CDB's  .................     27         0      27
  Write CDB's .................     34         0      34
  Other CDB's .................     62         0      62
  Vendor Specific CDB's ......      80         0      80
  Undefined CDB's.............      53         0      53

Testing device ¥¥.¥PhysicalDrive3
Device is software WRITE PROTECTED

     IRP Function                Code   Result
-------------------------------------------------
 IRP_MJ_CREATE                  (0x00)  BLOCKED
 IRP_MJ_CREATE_NAMED_PIPE         (0x01)  ALLOWED
 IRP_MJ_CLOSE                   (0x02)  ALLOWED
 IRP_MJ_READ                    (0x03)  ALLOWED
 IRP_MJ_WRITE                   (0x04)  BLOCKED
 IRP_MJ_QUERY_INFORMATION         (0x05)  ALLOWED
 IRP_MJ_SET_INFORMATION           (0x06)  BLOCKED
 IRP_MJ_QUERY_EA                 (0x07)  ALLOWED
 IRP_MJ_SET_EA                   (0x08)  BLOCKED
 IRP_MJ_FLUSH_BUFFERS             (0x09)  BLOCKED
 IRP_MJ_QUERY_VOLUME_INFORMATION   (0x0A)  ALLOWED
```

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IRP_MJ_SET_VOLUME_INFORAMATION    (0x0B)  BLOCKED
IRP_MJ_DIRECTORY_CONTROL          (0x0C)  ALLOWED
IRP_MJ_FILE_SYSTEM_CONTROL        (0x0D)  ALLOWED
IRP_MJ_DEVICE_CONTROL             (0x0E)  ALLOWED
IRP_MJ_SCSI                       (0x0F)

 SCSI Operation        Opcode
 ------------------------------
 TEST_UNIT_READY       (0x00)          ALLOWED
 REWIND                (0x01)          ALLOWED
 VENDOR_SPECIFIC_CDB   (0x02)          BLOCKED
 REQUEST_SENSE         (0x03)          ALLOWED
 FORMAT_UNIT           (0x04)          BLOCKED
 READ_BLOCK_LIMITS     (0x05)          ALLOWED
 VENDOR_SPECIFIC_CDB   (0x06)          BLOCKED
 REASSIGN_BLOCKS       (0x07)          BLOCKED
 READ6                 (0x08)          ALLOWED
 VENDOR_SPECIFIC_CDB   (0x09)          BLOCKED
 WRITE6                (0x0A)          BLOCKED
 SEEK6                 (0x0B)          ALLOWED
 VENDOR_SPECIFIC_CDB   (0x0C)          BLOCKED
 VENDOR_SPECIFIC_CDB   (0x0D)          BLOCKED
 VENDOR_SPECIFIC_CDB   (0x0E)          BLOCKED
 READ_REVERSE6         (0x0F)          BLOCKED
 WRITE_FILEMARKS       (0x10)          BLOCKED
 SPACE                 (0x11)          BLOCKED
 INQUIRY               (0x12)          ALLOWED
 VERIFY6               (0x13)          ALLOWED
 RECOVER_BUF_DATA      (0x14)          BLOCKED
 MODE_SELECT           (0x15)          ALLOWED
 RESERVE_UNIT          (0x16)          ALLOWED
 RELEASE_UNIT          (0x17)          ALLOWED
 COPY                  (0x18)          BLOCKED
 ERASE                 (0x19)          BLOCKED
 MODE_SENSE            (0x1A)          ALLOWED
 START_STOP_UNIT       (0x1B)          ALLOWED
 RECEIVE_DIAGNOSTIC    (0x1C)          ALLOWED
 SEND_DIAGNOSTIC       (0x1D)          ALLOWED
 MEDIUM_REMOVAL        (0x1E)          ALLOWED
 UNDEFINED_CDB         (0x1F)          BLOCKED
 VENDOR_SPECIFIC_CDB   (0x20)          BLOCKED
 VENDOR_SPECIFIC_CDB   (0x21)          BLOCKED
 VENDOR_SPECIFIC_CDB   (0x22)          BLOCKED
 VENDOR_SPECIFIC_CDB   (0x23)          BLOCKED
 SET_WINDOW            (0x24)          ALLOWED
 READ_CAPACITY         (0x25)          ALLOWED
 VENDOR_SPECIFIC_CDB   (0x26)          BLOCKED
 VENDOR_SPECIFIC_CDB   (0x27)          BLOCKED
 READ10                (0x28)          ALLOWED
 READ_GENERATION       (0x29)          ALLOWED
 WRITE10               (0x2A)          BLOCKED
 SEEK10                (0x2B)          ALLOWED
 ERASE10               (0x2C)          BLOCKED
 VENDOR_SPECIFIC_CDB   (0x2D)          BLOCKED
```

```
WRITE_AND_VERIFY10    (0x2E)          BLOCKED
VERIFY               (0x2F)         ALLOWED
SEARCH_DATA_HIGH      (0x30)          ALLOWED
SEARCH_DATA_EQUAL     (0x31)          ALLOWED
SEARCH_DATA_LOW       (0x32)          ALLOWED
SET_LIMITS           (0x33)         ALLOWED
READ_POSITION         (0x34)          ALLOWED
SYNCHRONIZE_CACHE     (0x35)          BLOCKED
LOCK_UNLOCK_CACHE     (0x36)          ALLOWED
READ_DEFECT_DATA      (0x37)          ALLOWED
MEDIUM_SCAN           (0x38)         ALLOWED
COMPARE              (0x39)         ALLOWED
COPY_COMPARE          (0x3A)          BLOCKED
WRITE_DATA_BUFF       (0x3B)          BLOCKED
READ_DATA_BUFF        (0x3C)          ALLOWED
UNDEFINED_CDB         (0x3D)          BLOCKED
READ_LONG10           (0x3E)         ALLOWED
WRITE_LONG10          (0x3F)          BLOCKED
CHANGE_DEFINITION     (0x40)          ALLOWED
WRITE_SAME10          (0x41)          BLOCKED
READ_SUB_CHANNEL      (0x42)          ALLOWED
READ_TOC             (0x43)         ALLOWED
READ_HEADER           (0x44)          ALLOWED
PLAY_AUDIO            (0x45)         ALLOWED
GET_CONFIGURATION     (0x46)          ALLOWED
PLAY_AUDIO_MSF        (0x47)          ALLOWED
PLAY_TRACK_INDEX      (0x48)          ALLOWED
PLAY_TRACK_RELATIVE   (0x49)          ALLOWED
GET_EVENT_STATUS      (0x4A)          ALLOWED
PAUSE_RESUME          (0x4B)         ALLOWED
LOG_SELECT           (0x4C)         ALLOWED
LOG_SENSE            (0x4D)         ALLOWED
STOP_PLAY_SCAN        (0x4E)          ALLOWED
UNDEFINED_CDB         (0x4F)          BLOCKED
XDWRITE10            (0x50)         BLOCKED
XPWRITE10            (0x51)         BLOCKED
XDREAD10             (0x52)         ALLOWED
XDWRITucRead10        (0x53)          BLOCKED
SEND_OPC_INFORMATION  (0x54)          ALLOWED
MODE_SELECT10         (0x55)         ALLOWED
RESERVE_UNIT10        (0x56)          ALLOWED
RELEASE_UNIT10        (0x57)          ALLOWED
REPAIR_TRACK          (0x58)         BLOCKED
UNDEFINED_CDB         (0x59)          BLOCKED
MODE_SENSE10          (0x5A)         ALLOWED
CLOSE_TRACK_SESSION   (0x5B)          BLOCKED
READ_BUFFER_CAPACITY  (0x5C)          ALLOWED
SEND_CUE_SHEET        (0x5D)         BLOCKED
PERSISTENT_RESERVE_IN  (0x5E)          ALLOWED
PERSISTENT_RESERVE_OUT (0x5F)          ALLOWED
UNDEFINED_CDB         (0x60)         BLOCKED
UNDEFINED_CDB         (0x61)         BLOCKED
UNDEFINED_CDB         (0x62)         BLOCKED
UNDEFINED_CDB         (0x63)         BLOCKED
```

```
UNDEFINED_CDB          (0x64)          BLOCKED
UNDEFINED_CDB          (0x65)          BLOCKED
UNDEFINED_CDB          (0x66)          BLOCKED
UNDEFINED_CDB          (0x67)          BLOCKED
UNDEFINED_CDB          (0x68)          BLOCKED
UNDEFINED_CDB          (0x69)          BLOCKED
UNDEFINED_CDB          (0x6A)          BLOCKED
UNDEFINED_CDB          (0x6B)          BLOCKED
UNDEFINED_CDB          (0x6C)          BLOCKED
UNDEFINED_CDB          (0x6D)          BLOCKED
UNDEFINED_CDB          (0x6E)          BLOCKED
UNDEFINED_CDB          (0x6F)          BLOCKED
UNDEFINED_CDB          (0x70)          BLOCKED
UNDEFINED_CDB          (0x71)          BLOCKED
UNDEFINED_CDB          (0x72)          BLOCKED
UNDEFINED_CDB          (0x73)          BLOCKED
UNDEFINED_CDB          (0x74)          BLOCKED
UNDEFINED_CDB          (0x75)          BLOCKED
UNDEFINED_CDB          (0x76)          BLOCKED
UNDEFINED_CDB          (0x77)          BLOCKED
UNDEFINED_CDB          (0x78)          BLOCKED
UNDEFINED_CDB          (0x79)          BLOCKED
UNDEFINED_CDB          (0x7A)          BLOCKED
UNDEFINED_CDB          (0x7B)          BLOCKED
UNDEFINED_CDB          (0x7C)          BLOCKED
UNDEFINED_CDB          (0x7D)          BLOCKED
UNDEFINED_CDB          (0x7E)          BLOCKED
UNDEFINED_CDB          (0x7F)          BLOCKED
XDWRITE_EXTENDED       (0x80)          BLOCKED
REBUILD               (0x81)          BLOCKED
REGENERATE            (0x82)          BLOCKED
EXTENDED_COPY          (0x83)          BLOCKED
RECEIVE_COPY_RESULTS   (0x84)          ALLOWED
ATA_PASSTHROUGH16      (0x85)          BLOCKED
ACCESS_CONTROL_IN      (0x86)          ALLOWED
ACCESS_CONTROL_OUT     (0x87)          ALLOWED
READ16                (0x88)          ALLOWED
UNDEFINED_CDB          (0x89)          BLOCKED
WRITE16               (0x8A)          BLOCKED
UNDEFINED_CDB          (0x8B)          BLOCKED
READ_ATTRIBUTE         (0x8C)          ALLOWED
WRITE_ATTRIBUTE        (0x8D)          BLOCKED
WRITE_AND_VERIFY16     (0x8E)          BLOCKED
VERIFY16              (0x8F)          ALLOWED
PRE-FETCH16            (0x90)          ALLOWED
SYNCHRONIZE_CACHE16    (0x91)          BLOCKED
LOCK-UNLOCK CACHE      (0x92)          ALLOWED
WRITE_SAME16           (0x93)          BLOCKED
UNDEFINED_CDB          (0x94)          BLOCKED
UNDEFINED_CDB          (0x95)          BLOCKED
UNDEFINED_CDB          (0x96)          BLOCKED
UNDEFINED_CDB          (0x97)          BLOCKED
UNDEFINED_CDB          (0x98)          BLOCKED
UNDEFINED_CDB          (0x99)          BLOCKED
```

```
UNDEFINED_CDB          (0x9A)          BLOCKED
UNDEFINED_CDB          (0x9B)          BLOCKED
UNDEFINED_CDB          (0x9C)          BLOCKED
UNDEFINED_CDB          (0x9D)          BLOCKED
UNDEFINED_CDB          (0x9E)          BLOCKED
UNDEFINED_CDB          (0x9F)          BLOCKED
REPORT_LUNS           (0xA0)          ALLOWED
ATA_PASSTHROUGH12      (0xA1)          BLOCKED
SEND_EVENT            (0xA2)          BLOCKED
SEND_KEY              (0xA3)          ALLOWED
REPORT_KEY            (0xA4)          ALLOWED
MOVE_MEDIUM           (0xA5)          ALLOWED
LOAD_UNLOAD_SLOT       (0xA6)          ALLOWED
SET_READ_AHEAD         (0xA7)          ALLOWED
READ12                (0xA8)          ALLOWED
UNDEFINED_CDB          (0xA9)          BLOCKED
WRITE12               (0xAA)          BLOCKED
UNDEFINED_CDB          (0xAB)          BLOCKED
ERASE12               (0xAC)          BLOCKED
READ_DVD_STRUCTURE     (0xAD)          ALLOWED
WRITE_AND_VERIFY12     (0xAE)          BLOCKED
VERIFY12              (0xAF)          ALLOWED
SEARCH_DATA_HIGH12     (0xB0)          ALLOWED
SEARCH_DATA_EQUAL12    (0xB1)          ALLOWED
SEARCH_DATA_LOW12      (0xB2)          ALLOWED
SET_LIMITS12           (0xB3)          ALLOWED
READ_ELEMENT_STATUS_AT (0xB4)          ALLOWED
REQUEST_VOL_ELEMENT    (0xB5)          BLOCKED
SEND_VOLUME_TAG        (0xB6)          ALLOWED
READ_DEFECT_DATA12     (0xB7)          ALLOWED
READ_ELEMENT_STATUS    (0xB8)          ALLOWED
READ_CD_MSF12          (0xB9)          ALLOWED
SCAN12                (0xBA)          ALLOWED
SET_CDROM_SPEED12      (0xBB)          ALLOWED
PLAY_CD12             (0xBC)          ALLOWED
MECHANISM_STATUS       (0xBD)          ALLOWED
READ_CD12             (0xBE)          ALLOWED
SEND_DVD_STRUCTURE     (0xBF)          ALLOWED
VENDOR_SPECIFIC_CDB    (0xC0)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xC1)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xC2)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xC3)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xC4)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xC5)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xC6)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xC7)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xC8)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xC9)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xCA)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xCB)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xCC)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xCD)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xCE)          BLOCKED
VENDOR_SPECIFIC_CDB    (0xCF)          BLOCKED
```

```
 VENDOR_SPECIFIC_CDB    (0xD0)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xD1)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xD2)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xD3)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xD4)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xD5)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xD6)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xD7)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xD8)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xD9)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xDA)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xDB)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xDC)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xDD)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xDE)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xDF)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xE0)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xE1)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xE2)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xE3)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xE4)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xE5)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xE6)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xE7)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xE8)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xE9)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xEA)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xEB)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xEC)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xED)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xEE)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xEF)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xF0)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xF1)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xF2)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xF3)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xF4)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xF5)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xF6)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xF7)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xF8)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xF9)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xFA)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xFB)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xFC)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xFD)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xFE)          BLOCKED
 VENDOR_SPECIFIC_CDB    (0xFF)          BLOCKED

IRP_MJ_SHUTDOWN                (0x10)  ALLOWED
IRP_MJ_LOCK_CONTROL             (0x11)  ALLOWED
IRP_MJ_CLEANUP                 (0x12)  ALLOWED
IRP_MJ_CREATE_MAILSLOT          (0x13)  ALLOWED
IRP_MJ_QUERY_SECURITY           (0x14)  ALLOWED
```

```
 IRP_MJ_SET_SECURITY             (0x15)  BLOCKED
 IRP_MJ_POWER                   (0x16)  ALLOWED
 IRP_MJ_SYSTEM_CONTROL           (0x17)  ALLOWED
 IRP_MJ_DEVICE_CHANGE            (0x18)  ALLOWED
 IRP_MJ_QUERY_QUOTA              (0x19)  ALLOWED
 IRP_MJ_SET_QUOTA                (0x1A)  BLOCKED
 IRP_MJ_PNP                     (0x1B)  ALLOWED

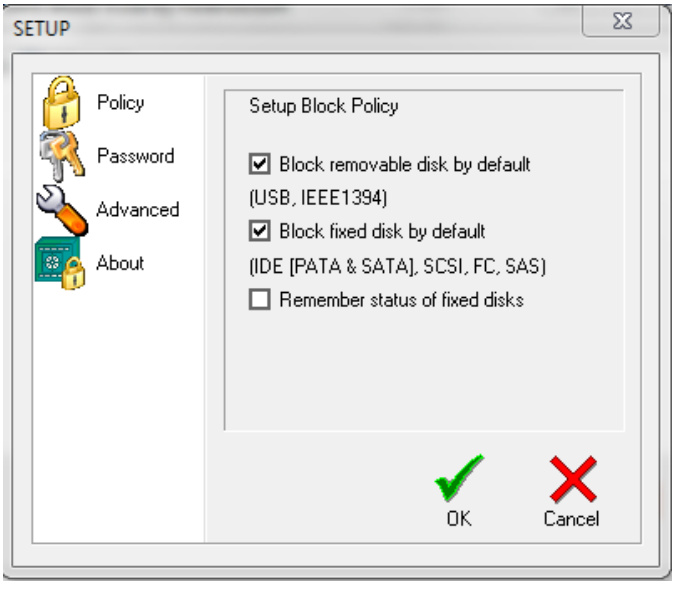
 ****************** TEST RESULTS SUMMARY *****************

      Test Category          Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................      4         0       4
  Write IRP's ................      0         8       8
  Other IRP's ................     15         0      15

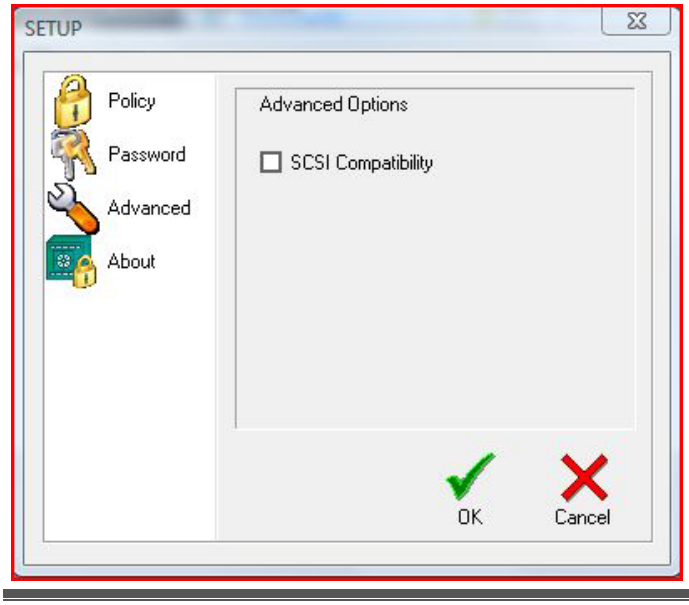
  Read CDB's  ................     27         0      27
  Write CDB's ................      0        34      34
  Other CDB's ................     61         1      62
  Vendor Specific CDB's ......      0        80      80
  Undefined CDB's.............      0        53      53
```

Appendix B – SAFE Block Policy Settings

SAFE Block Vista V1.0 uses policies to control write-blocking behavior for newly detected disks as well as disks that persist after rebooting the machine. For the purposes of all tests conducted, SAFE Block Vista V1.0 was set to block all disks by default and to not remember the write-block status of disks. This means that all disks, except the system disk, would be blocked on re-boot or insertion.



SAFE Block Vista 1.0 also has an advanced setting which will cause it to allow uncommonly used vendor specific SCSI commands to pass through to a disk in case the blocking of these commands causes a SCSI disk to malfunction. For the purposes of all tests, this feature was turned off, which is the SAFE Block Vista V1.0 default setting.



Appendix C - Software modifications made

In order to allow the NIST Software Write Blocker Test Suite V1.2 [1] to run on Windows Vista®, minor modifications to both the NIST Test Suite and SAFE Block Vista V1.0 [2] needed to be made. These changes in no way affected the operation of either application or the validity of the test. Please contact document authors to obtain the modified software.

NIST Software Write Blocker Test Suite V1.2

The source code for the application "devctl.exe" needed to modified in order to allow the application to compile for use in Windows Vista®. These modifications did not affect the drivers *pitcher* or *catcher* used in the test suite as detailed in [3] in any way, and were made solely to the Microsoft Windows® 7 DDK [6] header files for syntactical compliance with Windows Vista®. In order to allow devctl.exe to compile, the following files had some lines redacted: winbase.h, windef.h, windows.h, and winnt.h.

SAFE Block Vista V1.0

SAFE Block Vista V1.0 contains a routine that will ensure that no other filter drivers can be installed below SAFE Block in the driver stack to any storage device. This is a safety feature to ensure no other applications can be installed that will allow a disk to be modified. Due to the installation requirements of the NIST Test Suite [3], this feature had to be disabled for testing. Affected file: InstDrv.dll.

References

[1] National Institute of Standards, *NIST Software Write Blocker Test Suite V1.2;* http://www.cftt.nist.gov/ACES-test-support.zip
[2] ForensicSoft Inc, *SAFE Block Vista V1.0*; http://www.forensicsoft.com
[3] National Institute of Standards, *ACES Software Write Block Tool Test Report: Writeblocker Windows Vista Version 6.10.0;* Jan 2008; http://www.nist.gov/cgi-bin/exit_nist.cgi?url=http://www.ojp.usdoj.gov/nij/pubs-sum/220222.htm
[4] AccessData Inc, *FTK Imager2.7.0;* http://www.accessdata.com
[5] busTRACE, *Filter Driver Load Order v1.0.009*; http://www.bustrace.com/products/devfilter.htm
[6] Microsoft Inc, *WDK and Developer Tools*; http://www.microsoft.com/whdc/Devtools/wdk/default.mspx
[7]Guidance Software Inc, *Encase® Forensic v6*; http://www.guidancesoftware.com